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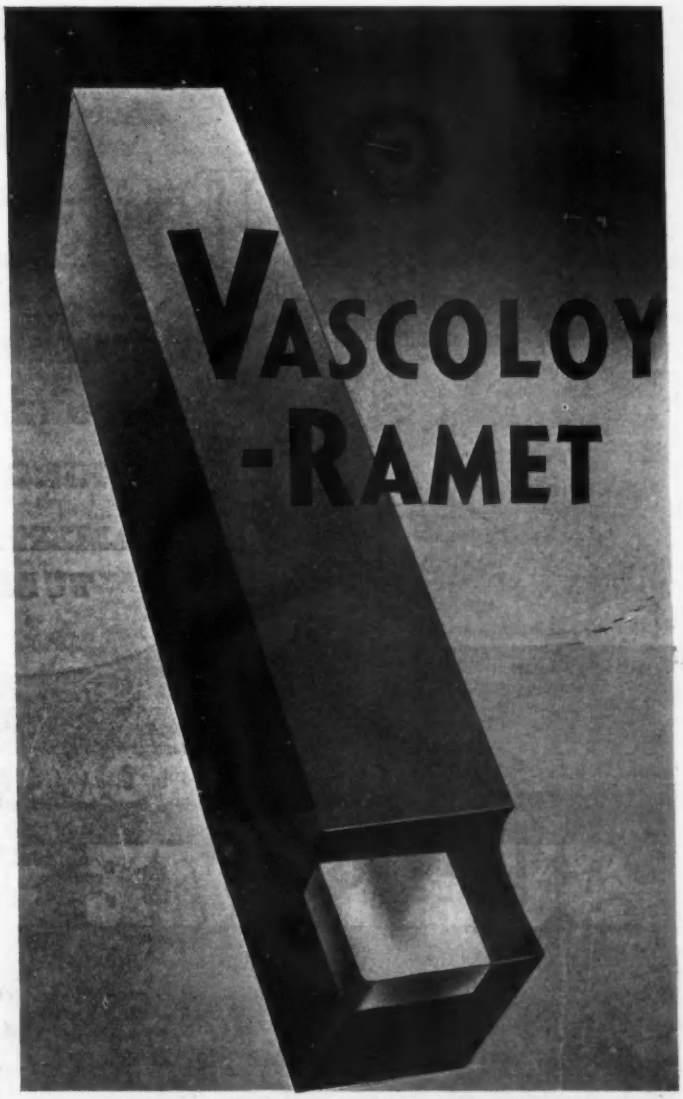

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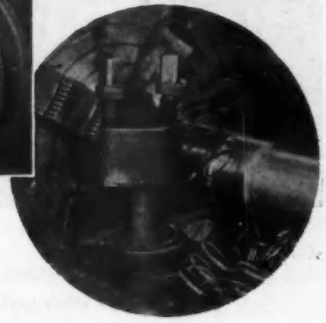

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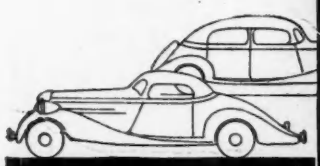

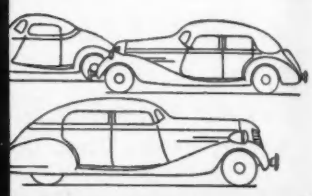

FOR AUTOMOTIVE PARTS

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AUTOMOTIVE INDUSTRIES

Vol. 73, No. 7 ▫ THIRTY-SEVENTH YEAR ▫ August 17, 1935

Plant Changeovers Under Way

September Seen as Low Point Of Car Production for Year

by Harold E. Gronseth
Detroit News Editor, Automotive Industries

The low point in motor vehicle production for the current year apparently will fall in September when the industry will be in the midst of its change-over to new models. That month will compare more nearly with November of last year from the standpoint of progress in preparatory work at the plants.

The industry's output next month, however, is not likely to drop to the level of last November when 80,162 cars and trucks were turned out. Neither is it probable that the plants will be far enough along with their new programs to warrant the expectation of exceeding the current month's estimated production of 200,000 units or better. Three more plants were due to wind up their 1935 runs this week and a fourth should finish next week, making seven plants in the Detroit district out of production by the end of August. The schedules of two of the leading producers for September, however, call for more cars than were turned out in November last year and other plants, either cleaning up or getting under way on new lines, should contribute sufficiently to the month's total to raise it above last year's low.

A well-sustained retail market, relatively smaller dealer inventories and the prospect of a stronger initial demand for new models, by reason of a more favorable season for new car announcements, are prodding manufacturers into prompt launching of new programs. In fact dealer pressure resulting from a prospective shortage of new cars in some quarters may advance certain introduction dates or at least speed up the stocking of dealers. Strange as it may seem, several manufacturers were over-sold on 1935 models when they closed their plants for change-over. With unfilled orders on their books, they found it expedient to cut off production on current lines instead of ordering more materials and extending the run in order to be on time with their 1936 models. So far as can be determined at this time all programs are progressing according to schedule.

Educated to January announcements of New Cars, the public appears to be taking little cognizance of the approaching new model season. Companies report that no appreciable effect on sales can be traced to the imminence of model changes. While slipping into seasonally lower levels, August sales have held up well and sales officials are confident they will hold reasonably firm throughout the month. Such figures as have been reported thus far for August show a drop of only 6 per cent from July, although there is considerable irregularity as between companies.

FTC to Hear NADA Trade Practice Request Aug. 23

The Federal Trade Commission has set Friday, Aug. 23 for a preliminary hearing on NADA's application for Federal Trade Practices, the association has notified all directors by telegram.

It is believed the board appointed by the Commission following the hearing will determine the future question as to whether or not the NADA formula for determining used car values will be approved and legally sustained.

Packard Turns Out 25,000 One-Twenties in 172 Days

The 25,000th Packard car in the "120" line was completed August 7, just 172 days after the first car came off the assembly line on Feb. 16. It carried orders for immediate shipment as the company as yet has not caught up with orders.

"That car looks like any other standard blue sedan," said Alvan Macauley, Packard president, "but it marks an epoch in the company's history."

NADA Flays FOB Price Advertising as Misrepresentation; for Del'd Prices

Taking a strong position against F.O.B. and for advertised delivered prices, the current issue of the NADA Bulletin declares that "Advertising managers must be convinced that more harm than good results from F.O.B. advertising as presently done."

"While the F.O.B. price might have been justified in the old days," the Bulletin continues, "when automobiles were built to order . . . merchandising methods in vogue today would change the picture." F.O.B. advertising is charged with saddling the dealer with the onus of explaining and justifying a much higher price than the manufacturer implants in the public mind.

Asserting that the practice tends to give the public an exaggerated idea of the dealer margins, the Bulletin states that the actual purchase price is frequently 25 per cent above the F.O.B.

Subsequently advertising F.O.B. prices is described as simple misrepresentation "because the public is unable, under any circumstances, to purchase the car at the price advertised. This is true even in the City of Detroit. . . . In addition to the harmful price situation, competitive factory advertising has reached another point of ridicule, as well as sheer misrepresentation through picturing models entirely different from those for which the prices are quoted, and leaving out such items as bumpers, spare tire, etc. If the present practice continues unabated one need not be surprised to see eventually an advertised F.O.B. price which lists such items as fenders, wheels, bodies, etc., as 'plus' items."

ALB Operations Analyzed Critically in New Brookings Institute Volume

The Automobile Labor Board is discussed critically in a chapter devoted to its operations in a book entitled "Labor Relations Board" by Lewis L. Lorwin and Arthur Wubnig, published this week by the Brookings Institution. The book is the sixth of a series dealing with NRA, which have been published by the Institution.

In general the operations of the Board are pictured in an unfavorable light. In effect, the authors suggest that the Board may have been biased in favor of the employers on the ground that they held the balance of power and to do otherwise might have provoked their withdrawal from the code. Moreover, in labor relations, it is claimed that under NRA automobile manufacturing was a privileged industry, first, because the President's settlement sanctioned the theory of works councils and proportional representation and, second, because of the merit clause. The Board is given credit for adjusting a number of strike situations "on the basis of expediency rather than in accordance with clearly defined principles." The Board also is credited with initiating a number of conferences between unions and employers from which nothing resulted in the way of union recognition "largely due to the weakness of the A. F. of L. unions." In connection with the works councils set up by the Board, the authors state that it was taken for granted that the workers were bound by the settlement and hence they were not consulted as to whether they approved the bargaining agencies. Thus the ALB "tended to impose . . . a sort of semi-public unionism."

A major cause of A. F. of L. dissatisfaction with the Board, the authors state, was its refusal to develop "through formal 'decisions'" a theory of Section 7a similar to that of the NLB and NLRB, but they mention later that the theory of 7a which the Board was charged with administering, was laid down in the settlement itself. Instead the Board followed the policy of meeting trouble as it arose. Union dissatisfaction with this policy, it is pointed out, was due to the fact that they considered the settlement as a defeat and when the Board refused to cooperate in their effort to turn this defeat into victory, they were disappointed.

The Board's rules on lay-offs and rehiring are described as completely reversing the one laid down in the President's settlement and as "apparently based on a complete acceptance of the automobile code's 'individual merit clause'."

In analyzing the Board's handling of individual cases coming before it, the authors emphasize that in no instance was the employer found guilty of discrimination, although in a number of cases the Board did find the employer not guilty of discrimination.

Some weight is given to the now pretty well discredited Henderson report by two quotations from it and the subsequent opinion of the Recovery Board that a Board for the automotive industry should be established under Public Resolution 44, which opinion is said to bear out some of the widespread criticism of ALB and "gave weight to the demand for a new approach to industrial relations in the automobile industry."

Whether intentionally or not, the authors take what seem like two unnecessary digs at Richard L. Byrd, the labor member of the Board. By stating that he broke with the A. F. of L. unions, there is at least an inference of antagonism. If memory serves correctly, the reverse was true—the A. F. of L. unions broke with Mr. Byrd when he declined to take their orders. The authors also state that Mr. Byrd did not dissent from a single decision. Again, if memory serves correctly, Mr. Byrd did dissent on one or more occasions.

In general the authors appear to have attempted to deal with the ALB objectively, but from the standpoint of this admittedly not unbiased reviewer, they seemed to attach an unjustified weight to the charges of professional labor leaders, perhaps in the belief that is widespread in Washington that the A. F. of L. and labor are necessarily one and the same thing. After all, there is no absolutely conclusive evidence as to what the great mass of automobile workers thought about the ALB. The A. F. of L., certainly not an impartial or disinterested agency, claimed that the workers were thoroughly disgusted with the Board and largely on the testimony of Federation representatives, the Henderson report accepted these criticisms as fact. On the other hand, there is some evidence of worker satisfaction with the Board in the large percentage of workers who voted in the elections. Moreover, the election results demolish the claims of any labor organization to speak for automotive workers. At the same time, it is only fair to say that the election returns do not establish conclusively that the ALB established the kind of collective bargaining the mass of the workers want.

Ford to Condition Air for Foundry

Installation of air-conditioning equipment in various mould rooms of the Ford foundry is now under way. Because of the heat from the ladles of molten steel while casting is in progress, exact temperature control is impossible, but it will be possible to reduce the temperature and humidity greatly and so increase the comfort of the men. In this connection it is reported that the air-washing apparatus which previously supplied air to the foundry collected about 42 tons of dirt a week.

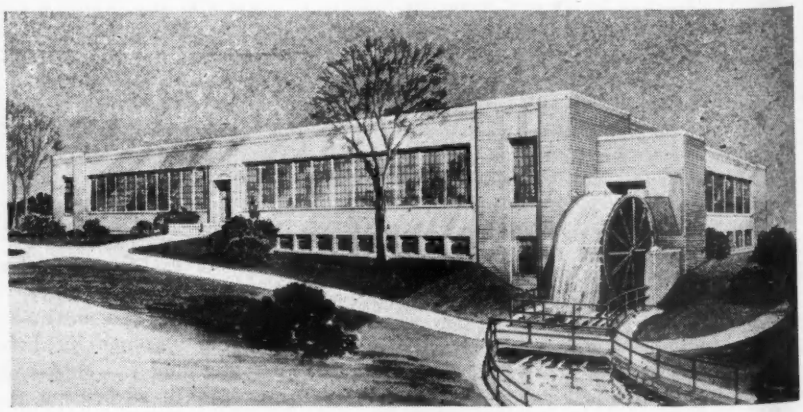
Other air-conditioned departments at the Ford plant include cylinder-barrel finishing, described in *Automotive Industries* recently, the gage rooms and a number of inspection rooms.

$350,000 Addition for Chrysler Canadian Plant

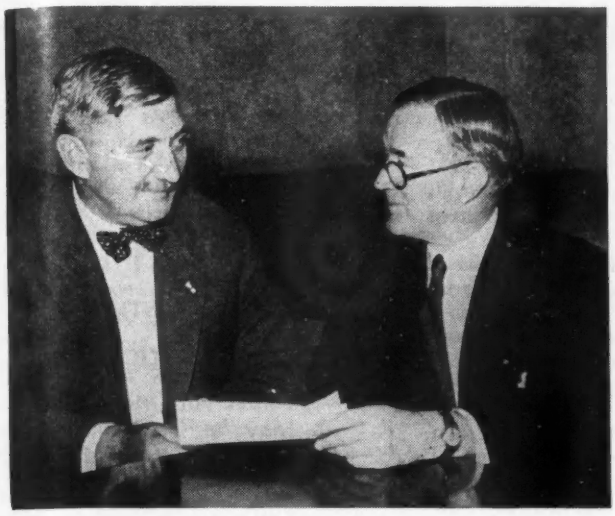
A $350,000 addition to the plant of the Chrysler Corporation of Canada, Ltd., Windsor, Ont., will be started immediately and put into operation in November, according to John D. Mansfield, president. The proposed expenditure covers building and equipment.

Wilson Foundry Reopening

Court sanction for the building of 10,000 more Willys-Overland cars this year will bring about the reopening of the Wilson Foundry at Pontiac on Sept. 3, according to Charles E. Wilson, assistant general manager. At that time 300 men will be called back to work to build transmissions as well as engines for the W-O cars. The court order approving the additional cars will mean steady work for several months for the foundry employees.



Architect's drawing of the new one-story valve factory being erected by the Ford Motor Co. at Northville, Mich. It will be of steel and brick construction, 200 ft. long and 100 ft. wide. When completed the new plant will replace the factory now in operation. The waterwheel will furnish only part of the power necessary for plant operation. Construction of the new factory was reported in the Aug. 3 issue of Automotive Industries



William S. Knudsen, left, GM executive vice - president, and R. H. Grant GM general sales manager, scan report of million car production by corporation since Jan. 1. The millionth car off the line was a Chevrolet sedan and was turned out Aug. 7.

Estimate Motors Use 30% of Steel Output

1935 Absorption Raised 9% Above Former Level by Conservative Gauge

While specifications and shipping orders coming to steel producers from automotive consumers continue to make possible an unusually high rate of operations for this time of the year, the large volume of automotive business that overhangs the market comes in for principal consideration. Conservative statisticians now estimate that automotive consumption in 1935 will absorb 30 per cent of the entire steel output.

In spite of the increased tonnages required by motor car manufacturers, specifications and shipping orders are issued with strict regard for the day when the material is needed either in parts or assemblies. A little more leeway is the rule in the case of full-finished automobile sheets, it having been found impossible to figure the time needed for finishing processes quite so closely as in the case of other steel products.

Sheet mills, taking the industry as a whole, are operating at approximately 60 per cent of capacity, with some plants running to the full extent of their mechanical and man-power. Strip mills are not doing quite so well in terms of operating rate percentages, hot and cold rolled mills running at somewhere around 40 per cent of capacity. Demand for both cold-finished steel bars and alloy steels shows a decided upward trend. Manufacturing wire is also being ordered more freely. In connection with recent round tonnage commitments for deep drawn sheets, it is now pointed out that extras, amounting to from $3 to $7 a ton, were waived. It is becoming more and more apparent that, no matter how firm base prices may be, sellers and buyers have a ready-to-hand, give-and-take talking point in extras and negotiations concern these far more than base prices.

The American Iron and Steel Institute's report for this week schedules 48.1 per cent of the country's ingot capacity in operation, as compared with 46 per cent in the preceding week, a gain of approximately 4½ per cent and the highest rate in five months.

Pig Iron—Fair tonnages of foundry and malleable iron are being ordered out by automotive foundries, but on the whole the tendency continues to be buying in one or two carload lots, as needed, rather than contracting for future deliveries. Prices are unchanged all along the line.

Aluminum—Quiet and firm.

Copper—Producers are enjoying a steady run of business from consumers, estimated to absorb copper at the rate of about 5,000 tons a week. With producers holding their price at 8 cents, delivered Connecticut point, stocks are being liquidated in a healthy way. Very little speculative interest is in evidence, so that a sound basis for advances with greater demand is in sight.

Canadian GM Denies Age Discrimination Charge

General Motors of Canada, in a recently issued statement, denies the truthfulness of a remark attributed to H. H. Stevens, Canadian Minister of Trade and Commerce, that he had information indicating that after a man reaches 45 such firms as GM and Ford have little use for him in their factories. Mr. Stevens is reported to have made the statement in a speech delivered at Winnipeg.

The GM statement says: "We have about 1000 workmen on the payroll today who are over 45 years of age. Our practice in taking on new employees—and, of course, recently there have not been many taken because we have been absorbing our former employees—is quite naturally to engage younger men who have not given the best part of their lives at other work."

New Nebraska Brake Law

All trucks and buses operating in Nebraska and having a gross weight exceeding 12,000 pounds are required to have power brakes, auxiliary brakes or some standard type of booster brake equipment under a new law that became effective this month.

GM Spending $50,000,000 to Expand and Improve Productive Facilities

"Encouraged by the more assured outlook for profitable development," President Alfred P. Sloan, Jr., announced this week that General Motors "has authorized an expansion and reconstruction program of approximately $50,000,000." Involved in the program is a broadening of the corporation's policy of decentralization of its domestic manufacturing operations.

The greater part of the expansion program involves the purchase of machinery and other plant equipment for production, although there in addition will be a limited amount of building construction. Mr. Sloan points out that "it will be recognized that this program will make a contribution to employment, as affecting the capital goods industries, and many communities in which General Motors operates should ultimately benefit by the increased employment in prospect."

The expenditure will increase productive facilities here and abroad. In this country the expansion will affect particularly Chevrolet, Oldsmobile and Pontiac. The capacity of overseas plants in both England and Germany also will be increased as present capacity is inadequate to meet current demand.

The announcement of the expansion program was made in connection with the corporation's statement on first-half operations. The first half, Mr. Sloan said, "was characterized, both domestically and overseas, by an improved trend of business, with the gain apparently well sustained. In practically all countries throughout the world, the underlying economic forces, striving for recovery, are, at the moment, in the ascendancy over the adverse influences incident to political action."

Present indications are, in Mr. Sloan's opinion, that consumption of motor vehicles outside of the United States in 1935 will exceed any previous year in history. In this country he expects consumption to be about 70 per cent of 1929, or about 3,100,000 units for the domestic market. "Thus," he continues, "recovery has asserted itself to an important degree even greater outside than within the United States, if we are to adopt the previous peak of automotive consumption as our yardstick."

Comparative earning figures for the first half were published in *Automotive Industries* of July 27, 1935. The complete report to stockholders reveals, among other things, that current assets increased during the half year to $450,190,422, against $363,373,181 on Dec. 31, 1934, and $396,240,507 on June 30, 1934. Current liabilities on June 30 were $109,523,055, roughly $19,000,000 more than at the end of last year.

Senate Gets Drastically Revised Tax Bill "In Conformity" with FDR's Message

The "share the wealth," "soak the rich," or "soak the thrifty" (as it is seen from different viewpoints) tax bill got onto the Senate floor this week when the Senate Finance Committee reported a drastically revised version of the measure passed by the House. Passage of the bill will take place next week, it is being predicted.

The Senate Committee revised the House changes in personal income taxes and expanded the range of the graduated levy on corporate incomes to make them "more in conformity with the President's message." Despite this evidence of party regularity and acceptance of executive dictation, however, the Committee showed no compunction about throwing the inheritance tax overboard although it also was recommended by Mr. Roosevelt and passed by the House. Moreover the excess profits tax was retained with new, rates althought the administration has indicated it doesn't want it.

Late last week, it looked for a brief period as though the Senate Committee might do a job of tax revision that had some constructive aspects. It voted to broaden the base of personal income taxes by reducing personal exemptions and by starting surtaxes at $3,000 instead of $4,000, which with other changes would have augmented the estimated revenue from the bill substantially. But then political considerations got the upper hand, and the committee about-faced.

As recommended by the President, the Senate Committee increased surtaxes on incomes over $1,000,000, ditching the House increases which started at $50,000. It is understood that forty-odd persons had incomes in excess of $1,000,000 in 1933. The new rates are to apply on taxable years beginning after Dec. 31, 1935.

If the range of graduation of the levy on corporate incomes is a measure of the sinfulness of bigness, then the Senate Committee takes a position in between the House and the President. The House range of 13¼ to 14¼ per cent, as compared with the present flat 13¾ per cent, suggests that that branch of the Congress felt that bigness just bordered on the unmoral. The President took a more severe attitude in his message, recommending a range of 10¾ to 16¾. The Senate Committee squeezed in between with a range of from 12½ to 15½ per cent—12½ per cent on the first $15,000, 14 per cent on $15,000 to $40,000, 15 per cent on $40,000 to $100,000, and 15½ per cent on everything over $100,000. These levies would be effective for tax years ending after June 30, 1936. Under these schedules, corporations earning less than $50,000 will pay less taxes than at present while those earning more than that figure will pay more, the committee says.

In justification of the graduated tax, the committee states that in both 1932 and 1929 about 4½ per cent of corporations paying taxes reported net incomes in excess of $50,000 and that their incomes represented nearly 90 per cent of the total reported. The minority on the committee didn't regard this as much of a reason, a view that is shared by others.

In addition the committee placed a tax of about 2 per cent of corporate dividends received by corporations.

The excess profit schedules of the House were entirely changed and the tax on the declared value of the capital stock was increased from 0.1 to 0.15 per cent. To the credit of the committee, it also provided that corporations could redeclare the value of their capital stock where the House measure based the tax on the value declared under the 1934 measure.

Under the Senate proposals, no excess profits tax would be levied on net income up to 10 per cent of the declared value. On the 10 to 15 per cent bracket, the tax would be 6 per cent, and above 15 per cent, 12 per cent. This compares with the House plan of 1 per cent on the first 8 per cent, 5 per cent on 8-12 per cent, 10 per cent on 12-16 per cent, 15 per cent on 16-25 per cent, and 20 per cent on over 25 per cent.

These levies plus higher estate taxes, etc., are estimated to raise about as much revenue as the House measure—roughly $250,000,000—none of which will accrue during 1935 and very little during 1936.

Chevrolet Aims at 90,000 Deliveries During August

Increasing its August quota to 90,000 new car and truck deliveries, Chevrolet Motor Co. has launched for the current month what W. E. Holler, general sales manager, terms the most spectacular "honor award" selling campaign in the company's history. The Chevrolet sales organization is urged to make 30 per cent of the month's quota in the first 10 days, 34 per cent in the second 10 days and 36 per cent in the final ten-day period.

"We are aiming our sights higher than ever before for this time of the year," Mr. Holler said, "because we want to make this August the most outstanding August in Chevrolet history. This is the first campaign in which every member of our retail organization can participate in the honor awards that are to be made for meritorious selling achievement."

Dealers reaching their quotas will receive a bronze plaque inscribed with a message attesting Chevrolet's appreciation, and sales managers will be awarded a wrist watch. Every retail salesman who sells and registers four or more new cars or trucks also will receive a wrist watch.

Eastman to Administer Carrier Act Under ICC

Bureau of Motor Carriers May Be Created; Estimate $1,000,000 Operating Cost

The Interstate Commerce Commission is expected to make an early announcement of its organization to administer the Motor Carrier Act signed last Friday by President Roosevelt.

A separate division of the ICC, headed by Joseph B. Eastman, Federal Coordinator of Transportation, and two other members, will administer the Act.

Rumor has it the other two members will be Commissioners Frank McNanamy and William E. Lee. It also is understood that a Bureau of Motor Carriers, another separate body approved by the American Trucking Associations, Inc., will be created by the ICC and current reports indicate that John L. Rogers, assistant to Mr. Eastman, will head this division.

It has been estimated that administration of the Act will require the addition of 500 employees to the ICC payroll at a cost of approximately $1,000,000 a year. Such funds would have to be provided through a separate appropriation inasmuch as the Act carries no appropriation to cover the cost of its administration. In the event a Bureau of Motor Carriers is set up, it is understood it will take charge of the various phases of the Act, such as those relating to rates, tariffs, permits, legal work, and issuance of certificates.

The American Trucking Association has formed a committee which will con-

First Half Earnings

	First Six Months 1935	1934
14 Vehicle Makers previously reported	$102,101,779	$71,890,004
Graham-Paige	— 109,827	+ 20,005
Total	+$101,991,952	+$71,910,009
28 Parts Makers previously reported	$ 26,224,724	$15,683,542
Briggs Manufacturing Co.	6,545,458	3,637,800
Detroit Gray Iron Foundry Co.	76,379	— 18,587
Thompson Products, Inc.	393,126	427,795
Total	+$ 33,239,687	+$19,730,550
Grand Total	+$135,231,639	+$91,640,559

tact with the ICC in administration of the law. The committee consists of Ted V. Rodgers, Pennsylvania, president of the ATA; William E. Humphreys, Washington, D. C., chairman of the ATA Interstate Carriers Conference Group; Maurice Tucker, Indiana, chairman of the ATA National Rates and Tariffs Committee; H. E. Howell, Massachusetts; L. J. Benton, Kentucky; H. D. Horton, North Carolina and Roy B. Thompson, California.

Mr. Rodgers said that the group would be a clearing house for ideas proposed by members of the industry whose views will be presented to the ICC.

U. S. Plans Goods Movement Survey

May Use WPA Funds to Study Commodity Shipments by Truck

Plans are being perfected by U. S. Bureau of Public Roads for a survey of commodity movements by truck. The first survey will be a test study and will be made in the 12 trade areas between Wilmington, Del. and Elizabeth City, N. C. In these areas 78,000 owners operating 104,000 trucks will be personally interviewed. The survey will be part of a national study of all forms of transportation sponsored by the National Resources Committee with WPA funds. At the peak of the test survey 900 white collar relief workers will be employed.

Upon the results of this test survey will be based a decision whether or not to make a national survey in 1936. In this stupendous undertaking the following information will be uncovered: Status of operator class of operation during 1935; extent of operations during 1935, which will include number of trucks and trailers operated in each type of service; commodities hauled during 1935 in order of importance on tonnage basis; analysis of equipment, which will include type, age, service, rated capacity, registration class, fees and taxes.

After the survey is made the inter-area operators will be segregated and made the subject of special periodic studies to determine types and tonnage of commodities hauled, their origin and destination, mileage and gross revenue. If plans mature this will be the first time that a thorough truck study has been made. Previous efforts have been nothing more than samplings. The test survey involves a budget of $100,000.

Willys-Morrow Co. Plant Auction Approval Asked

The federal court at Toledo has been asked to authorize the offering of the Willys-Morrow plant at Elmira, N. Y., at public auction at an upset price of $250,000. The order to show cause why such an application should not be granted is returnable Aug. 17 at 9 a. m.

Recently an application to sell the plant for $250,000 to Elmira Industries, Inc., brought objections from some creditors and bondholders, and was withdrawn in favor of the auction plan.

The Willys-Morrow Co., a wholly owned subsidiary of Willys-Overland Co., at one time made transmissions for the parent company. Recently its equipment was sold as part of the liquidation being carried on by the receivers.

GM to Spend $300,000 on Oshawa Plant, Equipment

General Motors of Canada, Ltd., Oshawa, Ont., will spend over $300,000 enlarging and rearranging its plant and in adding new equipment, according to H. A. Brown, vice-president and general manager.

Newark Transportation Meeting to Be Repeated

Arrangements have been completed for a regional transportation meeting in Newark during the four days previous to the New York Automobile Show. It is being sponsored by the Motor Truck Association of New Jersey, the Metropolitan Section of the Society of Automotive Engineers, the New Jersey Highway Users Conference and the the Newark Chamber of Commerce.

The entire week will be proclaimed Commercial Motor Vehicle Week through New Jersey by order of Governor Hoffman. Vocational truck groups will carry special signs on motor vehicles conveying to the public the daily contribution of the truck to public welfare.

A commercial vehicle exhibit, with space commitments already greater than for the successful affair held last year, will occupy the Newark market.

Ford Blast Furnaces Now Produce 1600 Tons Daily

Modernization of the blast furnaces at the Ford River Rouge plant, increasing the daily capacity of the plant to 1600 tons, has been completed, company officials announce. The furnaces were remodeled at a cost of $580,000, which is part of the $20,000,000 expansion and revamping program announced by Ford about one year ago.

The last furnace to be rebuilt was increased in capacity from 500 to 800 tons daily. Another furnace was enlarged in the latter part of 1933 and its daily capacity stepped up from 600 to 800 tons per day.

Parts Packaging Practice Gets Standards Bureau OK

Simplified Practice Recommendation R161-35, Packaging of Automotive (Bus) Engine Parts, and Simplified Practice Recommendation R162-35, Packaging of Air Brake Parts, have been accorded the required degree of written approval by the industry and are effective from Sept. 1, 1935, according to an announcement by the Division of Simplified Practice, National Bureau of Standards. Complimentary copies of these Simplified Practice Recommendations in mimeographed form may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

New Carter Fuel Filter

Carter Carburetor Co., St. Louis, Mo., has placed on the market a new fuel filter known as the Carter Airdome. It has a glass bowl which can be readily removed for cleaning by means of a top thumb-nut clamp. The head is specially designed to prevent warpage or distortion. A large filtering area is provided by the brass cartridge screen. The list price of the filter is $1.50.

Old Age Pensions, Job Insurance Become Law as President Signs Security Bill

The Social Security measure, one of the major cards in the New Deal, became law this week with the President's signature.

Providing for a broad range of social benefits, the provisions of direct interest to business are those dealing with compulsory old age pensions and unemployment insurance.

To finance these two features the act levies taxes which ultimately will total enough to make the law one of the largest revenue measures in history. In 1950, it is estimated that these taxes will yield $2,700,000 annually. This compares with business savings in 1929, as estimated by the Department of Commerce, of $1,896,000,000. Ultimately, therefore, the cost of the measure will be in excess of the total savings of business in the most productive year the country has ever seen. Moreover, only time will reveal how the tremendous fiscal problems the measure presents are to be solved.

Business is generally sympathetic to the objectives of the act although there has been considerable feeling that action should have been postponed until recovery had progressed further.

Old age pensions are to be financed by an income tax on employees and a payroll tax on employers amounting for each group to 1 per cent beginning in 1937 and increasing every three years until 1949 when each group will pay a tax of 3 per cent, or a total of 6 per cent. Unemployment insurance will be financed by a tax beginning at 1 per cent on payrolls in 1936 and increasing to 2 per cent in 1937, and to 3 per cent in 1938. The total ultimate tax will amount to 9 per cent of payrolls.

The measure will be analyzed in detail in next week's issue.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

General business activity continued to improve last week, and many business men are optimistic regarding the outlook for trade this fall. The heavy industries have held up well, and electric output has reached the highest level this year.

Car Loadings Increase

Railway freight loadings during the week ended Aug. 3 totaled 597,083 cars, which marks a gain of 621 cars above those during the preceding week, a decline of 15,557 cars below those a year ago, and a decline of 48,377 cars below those two years ago.

Food Prices Stay Up

Retail food prices during the two weeks ended July 16 declined by 0.1 per cent, according to the Bureau of Labor Statistics. Current food prices average 10.7 per cent above those a year ago and 16.1 per cent above those two years ago. The largest decline during the fortnight was in the fruit and vegetables group, which fell by 2.3 per cent.

Current Output Rises

Production of electricity by the electric light and power industry in the United States during the week ended Aug. 3 was 9.9 per cent above that in the corresponding period last year.

N. Y. Employment Fluctuates

New York State factory employment continued to decline seasonally during the 30-day period ended July 15. The number of employed declined 0.5 per cent, while total payrolls dropped 1.2 per cent. However, these declines were less than the average for that period.

Lumbering Activity Gains

Lumber production during the week ended July 27 increased to the highest total for any week in the last 16 months, while shipments and orders were the largest since last April.

Farm Price Index Higher

The index of prices received by farmers for their commodities on July 15 stood at 102, which marks a gain of 15 points above that a year ago. The largest gain was made in the index for meat animal prices, which increased 50 points.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended Aug. 10 stood at 83.1, as against 82.9 the week before and 82.6 two weeks before.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended Aug. 7 showed a decrease of $1,000,000 in holdings of discounted bills. Holdings of bills bought in the open market and of government securities remained unchanged. Money in circulation increased $31,000,000, and monetary gold stocks increased $15,000,000.

Goodyear Replies to FTC Findings in Price Case

Reply to the charge of price discrimination in the sale of tires to Sears, Roebuck & Co., was filed on Tuesday with the Federal Trade Commission by the Goodyear Tire Co., which in its brief declared that the quantity of purchases by Sears, Roebuck & Co., was responsible for benefits to the Goodyear Company.

Specifically the answer was made to findings of the trial examiner presiding at the case which involved alleged violation of the Clayton Anti-Trust Act, and related to sales made in 1931 to Sears, Roebuck & Co., when the brief pointed out price concessions of $7,958,440 or 4.46 per cent were made. It was declared that the trial examiner failed to translate the amount of the trade discount into a percentage of the price and that the examiner improperly excluded from the expenses of the Goodyear Co.'s dealer expenses the net losses of company-owned stores. It was also declared that the examiner erroneously made an equal proration between Goodyear dealer and Sears, Roebuck business of Goodyear's expenses in advertising and selling Goodyear grand tires. It was further stated that the examiner erroneously charged as an expense in Goodyear's Sears, Roebuck business in 1931 the consideration of $1,250,000 paid by Goodyear for 1931 instead of charging this amount as an expense of Sears, Roebuck business in equal annual installments over the 10-year period of the contract.

Submit Mohair Pile Fabric Standard for Approval

A commercial standard for mohair pile fabrics (CS 52-35), recently accepted by the industry under the procedure of the National Bureau of Standards, has been submitted by the Bureau to the American Standards Association for approval. The purpose of the standard is to establish standard specifications and methods of test for mohair upholstery fabrics for the guidance of producers, distributors, and users, and to provide a uniform basis for guaranteeing quality through the use of labels or certification.

The standard covers 100 per cent mohair plain velvet, 100 per cent mohair plain frieze, and 50 per cent mohair plain frieze. It provides a minimum quality for each fabric, based on material, color fastness, weight of pile, construction of fabric, and treatment to prevent attack by moths.

Motor Travel Popularity Increases, Survey Shows

More people are traveling by automobile this season than in 1929, according to G. A. Perryman of Socony-Vacuum. "Inquiries for road information are 12 per cent above all time records," Mr. Perryman says, "and our service men report a large increase in motor travel in all parts of the country. This not only jibes with the record breaking production in the automotive industry this year, but also points out that people are spending more money for gasoline, oil, food and hotels. It has been found that each inquiry we receive for information averages a 980 mile trip."

Mr. Perryman stated that indications do not point toward a slackening with the coming of cold weather. "Even now," he said, "we are receiving a large number of inquiries for the best routes to the south and southwest from people who are contemplating trips this fall and winter."

Gasoline Consumption Up 3.6% in First Five Mos.

Gasoline consumption in May totaled 1,528,473,000 gal., an 8 per cent increase over the previous month and a gain of 3 per cent over the same month last year. In the first five months of this year, consumption was 6,488,413,000, an increase of 3.6 per cent over the corresponding 1934 period.

Despite the national increase May consumption was lower than last year in Arkansas, Colorado, Kansas, Louisiana, Maine, Nebraska, New Jersey, New York, Ohio and Texas.

Harris Builds Plant

A $100,000 manufacturing plant is now being completed at Cleveland for the Harris Calorific Co., manufacturers of welding and cutting apparatus for the automotive and ship building industries.

The company is a pioneer in the manufacture of acetylene generators, welders and cutters. Lorn Campbell, Jr., is president. The new plant is being built by the Gillmore, Carmichael, Olson Co. and will be a two-story building 240 feet long and 100 feet deep.

Rim Inspections Gain

The Tire and Rim Association, Inc., reports 1,339,353 rims inspected during July, which compares with 1,155,024 rims for the corresponding month last year. The January-July total is 11,445,945 rims, against 8,648,741 for the similar period last year.

FTC Restrains Birmingham Jobbers from Price Fixing

The Federal Trade Commission this week issued a cease and desist order against the Birmingham Automotive Jobbers Association, with the consent of the association, under which the respondent is required to "cease and desist from carrying out the terms of an agreement, combination, understanding and conspiracy to fix and maintain uniform prices to be exacted by them from purchasers of automobile parts and accessories. Under the Commission's order, the respondents are further required to cease and desist from doing or permitting, by agreement, understanding or combination, the following acts and practices:

"(1) Abiding by manufacturers' resale schedules in the selling of all automobile parts and accessories;

"(2) Fixing prices at which such articles should be sold;

"(3) Fixing prices for certain repair jobs involving only labor;

"(4) Fixing prices for repair jobs involving both automobile parts and labor;

"(5) Fixing or maintaining a schedule of discounts to be allowed by them to certain classes of purchasers of automobile parts and accessories;

"(6) Requiring their customers to resell such articles so purchased from them at list prices of the manufacturer thereof, or at prices fixed by respondent association, and

"(7) Requiring every member of respondent association, before a price change is to be effected by them or any of them, except close-out items, to notify either the secretary of respondent association or each member in writing."

The Commission dismissed the complaint against the Auto Electric & Carburetor Co. when that organization showed it had attempted to resign from the association in September last year, but that the resignation had not been accepted and that it had not participated in any association activities since November of that year.

Makers Withhold Comment on Japan's Control Bill

A bill setting up a system of licensing only those automobile companies to assemble or construct motor vehicles whose stock is more than half Japanese owned has been approved by the Imperial Cabinet and will be presented to the Diet at its January session.

American companies concerned, chiefly Ford and General Motors, have not commented officially upon the proposed measure concerning which only meagre details are available. As it now stands the bill would compel these companies, and others operating in Japan, to admit Japanese to 51 per cent participation or close their businesses in that country.

The Japanese Ministry of Commerce has explained introduction of the bill on the grounds of the industry's military and industrial importance. Under the present draft the bill's provisions would become effective two years hence.

Some leading Japanese newspapers already have opposed the measure on the basis that its passage probably would drive foreign manufacturers from the country and that they would set up plants in China and become a menace to Japanese business.

It has been intimated in Japan that the Mikado's government will impose heavy duties on parts and accessories imported for American companies if the manufacturers fail to cooperate under the new law and that tariff schedules will be drastically reduced on parts brought in for Japanese owned concerns.

Timken Seeks Stay of ICC Freight Rate Order

The Timken Roller Bearing Co. of Canton has asked the Federal Court in Cleveland to enjoin the government from putting into effect on Aug. 22 an Interstate Commerce Commission ruling reducing the amount of freight the company is allowed to haul between its plants and the main line railroads.

The petition asked that the Baltimore & Ohio, the Pennsylvania and the Wheeling & Lake Erie railroads be enjoined from acting under the I.C.C. order and the Commission be required to rescind the order after hearing the case on its merits. The ruling would compel the Timken Co. to pay freight rates for hauling higher than it now has to pay over its own system.

APEM Distributes More Parts Plants Wage Surveys

Surveys covering wages paid to workers in automotive parts plants in New York, Wisconsin, Pennsylvania and Los Angeles, Cal., are being distributed by the APEM to its members. The association previously has distributed surveys of wages paid in Michigan, Illinois and Indiana parts plants.

Canadian Dollar Volume Up 28% in First Half

Total Car, Truck Sales Reach $67,000,000; Ont. Dominion's Best Market

The dollar volume of Canadian retail car and truck sales for the first half of this year reached $67,000,000, according to statistics released by the Dominion Bureau of Statistics. This total, a gain of 28 per cent, was $15,000,000 greater than in the corresponding period of the previous year. Sales in 1933 totaled $28,500,000.

A break-down of the total figure showed that passenger car sales represented $56,000,000, while truck sales accounted for the remaining $11,000,000. Passenger car sale values rose approximately 24 per cent in the first six months of this year, while truck sales climbed 58 per cent over the corresponding value for the similar 1934 period.

The best Canadian market was the Province of Ontario, accounting for 54 per cent of total Canadian sales. This was an exactly similar proportion to the volume of sales in this province in the first half of last year.

During the January-June period of this year there were 56,733 passenger cars sold in Canada at an average retail selling price of $990. During the corresponding period of 1934 there were 44,100 cars sold at an average retail price of $1,028. Truck sales showed a similar trend. There were 11,104 trucks sold during the first half of the current year at an average retail sales price of $995, which compares with an average price of $1,025 for the same period last year.

Wholesale Financing Approximates 75% of Value of Car Dealers' New Unit Purchases

Indicative of the badly under-capitalized position of the industry's retail dealers, wholesale financing reached a new high in the first six months of this year when the total was $774,192,895, an increase of 39 per cent over the corresponding period last year and larger than the 12-month total of such financing reported by the Census Bureau for any previous year except 1934.

Average wholesale financing per new vehicle sold to U. S. dealers was $375 in the first half against $360 in the previous year. Since the average wholesale price of new vehicles in both years was somewhere near $500, the finance companies supplied dealers with about 75 per cent of the money they used to buy new vehicles. These estimates do not make any provision for the amounts advanced by finance companies on used car inventories but, while such advances have been materially larger this year, it is believed that the figures given provide a rough approximation of the new car picture.

The Census Bureau figures indicate that a smaller proportion of retail new vehicle sales was financed in the first half of 1935 than in the similar 1934 period—38.7 against 46.6 per cent. The ratio of used to new vehicles financed increased moderately from 1.21 in the first half of 1934 to 1.29 this year. It also is worthy of mention that although June sales were markedly above last year, new car financing this year was under June, 1934.

Detail comparative figures follow.

	June, 1935	May, 1934	June, 1934	Six Mos., 1935	Six Mos., 1934
Wholesale financing	$121,673,704	$135,510,277	$104,422,741	$774,192,895	$556,646,006
Retail financing					
Dollar volume	$111,731,482	$113,601,251	$103,450,110	$573,052,095	$455,772,982
No. of units	302,764	312,186	269,656	1,552,564	1,225,191
New vehicle dollar volume	$69,309,317	$70,175,835	$70,900,335	$360,666,983	$300,065,019
New vehicle units	125,983	127,201	128,794	664,799	542,162
Per new unit	$550	$552	$550	$543	$553
Used vehicle dollar volume	$40,397,316	$41,462,893	$30,679,003	$201,887,763	$147,344,537
Used vehicle units	171,139	179,462	135,875	858,690	659,488
Per used unit	$236	$231	$226	$235	$223

The balance amounting to 1.9 of the units financed at retail is not classified between new and used cars.

Fisher Ready to Operate Durant Plant in September

Full production in the old Durant plant at Lansing, Mich., which is being taken over by Fisher Body as part of its $3,500,000 expansion program, will be started early in September.

Equipment that will permit production of 1200 finished bodies daily, an increase of 33 1/3 per cent over the capacity of the present plant, is now being installed in the structure which contains more than 610,000 sq. ft. of floor space, according to E. F. Fisher, general manager of the body building division of General Motors.

Manufacturing operations will begin Tuesday, Sept. 3. The following Monday the plant is scheduled to go into full production, with 3000 men employed. This total may be increased to 4000 in the spring, Mr. Fisher states. The new plant will replace present facilities of Fisher Body in Lansing, which are being taken over by Oldsmobile.

Weekly Sales Reports From the Factories

Dodge

Last week's deliveries gained 36.1 per cent over same week year ago. . . . Totaled 7493 against 3781 units. . . . Included 1262 Dodge passenger cars and trucks, 2450 Plymouths. . . . Compares with 4103 passenger cars, 1188 trucks and 2525 Plymouths in preceding week. . . . Year-to-date total (first 32 weeks of year) 203,637 Dodge and Plymouth cars against 129,879 in similar 1934 period. . . . Trucks numbered 34,362 against 28,368. . . . Combined deliveries, 237,999 against 158,247.

Chrysler Division

Delivered 102,641 Plymouths from Jan. 1 to Aug. 10. . . . 29,146 Chrysler cars in same period. . . . Combined, 131,787 units. . . . Plymouth gain, 29.6 per cent; Chrysler, 79.5 per cent. . . . Combined lines, 38.1 per cent over same period of 1934. . . . Week ended Aug. 10, 2926 Plymouths, 839 Chryslers delivered; compares with 3210 Plymouths, 924 Chryslers in preceding week.

Cadillac-LaSalle

July retail deliveries exceeded any July since 1929. . . . Gain over 1934, 67 per cent and 90 per cent over 1933. July's increase compares with average gain of 47 per cent for first seven months.

Buick

Domestic retail sales 1681 for first 10 days of August. . . . Compares with 1630 for corresponding July period. . . . July sales close to peak of May and June.

DeSoto

Dealers report sales of 101,650 Plymouths and DeSotos in first 32 weeks of year. . . . An increase of 44.4 per cent over same period 1934. . . . Week of Aug. 10 deliveries of 547 DeSotos and 2455 Plymouths reported.

Scintilla Enlarges Plant

Scintilla Magneto Co., Inc., has recently placed contracts for a new factory building. 100 x 280 feet, and a second unit, 35 x 100 feet, adding approximately 31,500 square feet to its present plant at Sidney, N. Y. These additions will increase the company's facilities for the manufacture of Scintilla aircraft magnetos and battery ignition as well as Bendix automotive and industrial magnetos. Part of the new space will be devoted to the manufacture of Bendix H-T spark plugs and the facilities of the recently purchased Hurley-Townsend Corp. will be transferred to Sidney for this purpose.

Buick, Fisher, GM and Goodyear Accounts to Kudner

Arthur Kudner, president and treasurer of Erwin Wasey and Co., Inc., of New York, has resigned effective Sept. 30, and will form his own advertising agency to be known as Arthur Kudner, Inc., with headquarters in New York City and branch office in the New Center Building, Detroit.

In the automotive field, the new agency will handle the advertising accounts of Buick Motor Co., Fisher Body, General Motors institutional, Goodyear Tire and Rubber Co., National Distillers, Anchor Line Steamship Co., Standard Air Conditioning, the weekly radio program of *True Story*, and others. Erwin Wasey and Co. will retain Gordon Gin, Hecker H-O, Absorbine, Jr., and a group of proprietary medicines known as the Wasey Products, including Barbasol, Musterole and others.

Hupp Proxies Asked

Hupp Motor Car Corp. has sent a letter to stockholders urging them to attend the annual meeting on Sept. 11 at Richmond, Va., or to sign proxies in the names of five present directors. The letter, which was signed by all directors except Archie M. Andrews, former chairman of the board, and Seward L. Merriam who was absent from Detroit when the letter went out, stated that Mr. Andrews undoubtedly would seek to prevent the re-election of directors whose terms expire. It also states that satisfactory arrangements have been made with the company's suppliers and that since May 7, when the new management assumed control, 91 dealers and distributors have been added and that reductions have been made in overhead expenses.

Sales and operating losses by months from January to June inclusive, the letter reports as follows:

	Sales	Operating Loss
January	$ 215,849	$276,375
February	395,396	239,174
March	1,047,560	172,703
April	775,019	192,250
May	1,099,260	81,275
June	911,397	165,176

The June loss, as compared with that of May, is partially explained by the fact that the summer period of light shipments on current models began in this month, that 362 cars of an obsolete model were closed out at a reduced price and certain advertising expenses were resumed.

Spicer Gets Yellow Coach Universal Joint Order

The Spicer Manufacturing Corp., through R. E. Carpenter, vice-president and general manager, announced that it has received an order for universal joints and Brown-Lipe helical gear transmissions for 401 new Yellow Coaches to be built for the New York City Omnibus Corp.

Wisconsin Senate Passes Finance Co. Control Bill

The Wisconsin Senate has passed a bill providing for state regulation of automobile finance companies and other firms which finance instalment sales, despite the vigorous opposition of the NASFC. The bill is sponsored by the legislative interim committee which between the 1933 and 1935 sessions made an exhaustive investigation of finance company activities. Under terms of the bill, finance companies must be licensed by the Wisconsin state banking commission, as small loan companies now are. Numerous grounds for revocation of licenses, and fees beginning at $25 for the first $25,000 of gross business and increasing as the volume increases are also provided.

Pontiac Moving Offices

Pontiac Motor Co. is moving its administrative offices from the plant grounds back to the old site at Baldwin and Oakland Avenues. The four-story office building constructed in 1920 to house the offices of the old Oakland Motor Car Co. has been vacant since April, 1932. The company is spending $100,000 to refurbish and completely modernize the structure for occupancy late in September. In addition to the Pontiac general offices the building will house the staff of the Pontiac Detroit zone now in the General Motors Building. The move is part of the $3,500,000 expansion program now under way to double plant capacity for the ensuing year and relieves the building now used for administrative departments so that it may be available for exclusive use of manufacturing operations.

AFL Charters New Unions

The American Federation of Labor announces that it has granted charters to two large new local unions of automobile workers in Detroit—locals 20,033 and 20,041, while a third has applied and its charter will be issued in time for it to participate in the United Automobile Workers first constitutional convention in Detroit, August 26-31. It was not disclosed in what plants the unions were formed. Several cities in Wisconsin; South Bend and Richmond, Ind.; Waukegan, Ill.; Cleveland, Ohio; Grand Rapids and Birmingham, Ala., have had new UAW unions formed recently, it was stated. General Organizer F. J. Dillon is making a tour of the Middle West, calling on the various locals.

Hupp 6, 8 Touring Sedans Listed at $845 and $1,195

Hupp Motor Car Corp. has added a touring sedan, or built-in trunk model, to both its six and eight cylinder lines. The former listing at $845 and the latter at $1,195.

A Correction

U. S. registrations of new Pontiacs in the first six months were 75,124, not 45,124, as reported in *Automotive Industries* of Aug. 3, page 141.

National Income Rises in 1934 with Bigger Share for Wages and Salaries

Ending a long down-hill slide, total national income paid out turned the corner in 1934, increasing to $49,440,000,000 from $44,431,000,000 in 1933, according to Department of Commerce estimates. These totals include relief disbursements amounting to $637,000,000 in 1933 and to $1,394,000,000 in 1934, but even without these sums the total of income paid out expanded by $5,000,000,000.

Actual national income—that is income paid out less business losses—is estimated to have increased by six to seven billions, although a final estimate cannot be made until income tax data for 1933 and 1934 are available. However samples of published reports indicate that 1933 losses were less than half of those in 1932, while in 1934 the losses were only one-quarter to one-fifth as large as in 1932.

All types of enterprise except power and manufactured gas contributed to the increase in income paid out and all classes of payments except interest and entrepreneurial withdrawals shared in the increase. Income paid out by manufacturing industries rose from $8,273,000,000 in 1933 to $10,000,000,000 in 1934.

Labor income—wages and salaries—accounted in 1934 for the largest percentage of total income paid out in any year since before 1929. In 1929, labor income represented 65 per cent of the total. This percentage declined steadily through 1932. In 1933 it was 65.5 and in 1934 it rose 67 per cent.

Dividends increased from 4.6 in 1933 to 4.7 per cent of the total in 1934, which compare with 7.6 per cent in 1929. Interest, on the other hand, which took 6.5 per cent of the total in 1929, accounted for 9.1 per cent in 1934, a decrease from 1933 when the percentage was 10.3.

Net rents and royalties increased from 2.1 per cent in 1933 to 2.2 per cent in 1934, which compare with 4.4 per cent in 1929. Entrepreneurial withdrawals absorbed 16.4 per cent in 1934 against 16.6 per cent in 1933 and 15.8 per cent in 1928.

Jobber, Maker Salesmen's Contest Announced by NSPA

The NSPA has announced the fourth annual contest for jobbers' and manufacturers' salesmen and the Salesmen's Conference to be held in conjunction with the Automotive Service Industries Show to be held at Atlantic City Dec. 9. The contest and conference will be held Tuesday, Dec. 10.

Contestants will be assigned two subjects in each division upon which they will be required to write papers of approximately 15-minute reading lengths. Jobber salesmen will write upon "How I Assisted My Maintenance Customers to Increase Their Business During the Past Year" and "Successful Methods I Use to Sell My Firm's Services and Merchandise as Against Those of Other Distribution Channels." Manufacturers' salesmen will discuss "How I Help My Jobbers' Salesmen" and "If I Were Selling for a Wholesaler." Prizes will be round-trip fares to the Show and in cases where winners live near to Atlantic City cash prizes of $25 will be substituted.

Defeat Union Radicals Move to Elect Delegates

A radical group in the United Automobile Workers Federal Union No. 18384 was given another setback at a mass meeting of the union here when their effort to put forth a slate of 27 delegates to the Detroit convention, Aug. 26 to 31, to form an international union was defeated.

The present officials of the union countered with a proposal to let the executive committee select the delegates, and their plan was approved. Several candidates for each office in the local union have been placed on the ballots for the election, Aug. 17. The test of strength on the Detroit delegates proposal, however, indicated the regulars probably would win.

Launch Drive to Unionize Retail Automobile Salesmen

An attempt to organize a union of automobile salesmen was under way in Cleveland this week.

The organization began with a drive to obtain a $50,000 fund and announced its objects would be to protect both the salesman and the dealer by seeking to enforce in regular dealing the NRA code provisions for resale and trade-in values.

Financial support is being sought at this time from Cleveland automobile salesmen. There are approximately 2000 salesmen in the Cleveland territory. They will be asked to pay a $2 initiation fee and dues of $1 a month. This would net an annual income to the union of $28,000.

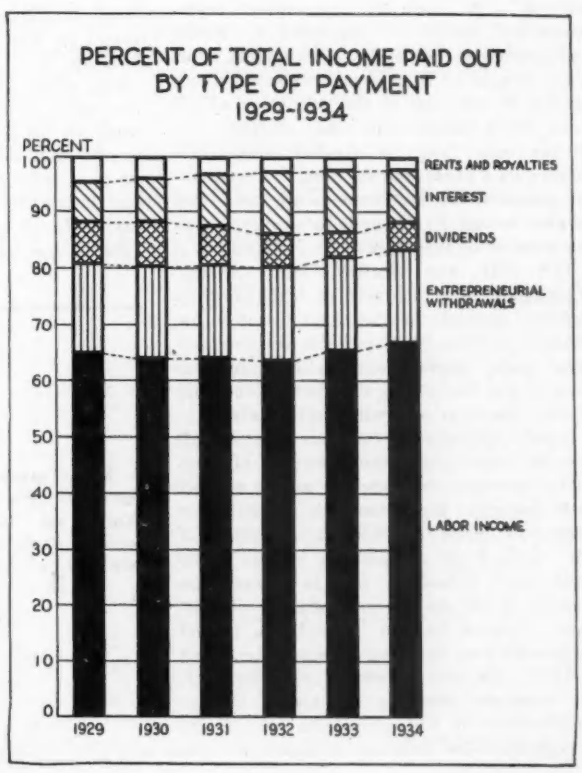
The new group is known as the Ohio Automobile Salesmen's Union with headquarters in Cleveland and with a charter issued by the Retail Clerks' International Protective Association which is affiliated with the American Federation of Labor.

B. R. Matthesen, organizer of the Union, said its purposes would be to enforce the appraisal book value on used cars that were in effect under the NRA code and to improve the working conditions of salesmen. Many Cleveland dealers have already opposed the plan and there may be general labor trouble in the sales field in the Cleveland area. Union organizers said they expect no trouble.

Charles Morgana

Charles Morgana, associated with a number of automobile companies over a long period of years, was killed Monday when his automobile struck a truck at Penfield, N. Y. Mr. Morgana began his career with the Ford Motor Co. in 1916. Later, with C. Harold Wills and John R. Lee, he resigned to help organize the Wills-Sainte Claire Co. Mr. Morgana also was associated with the Chrysler Corp. for several years as assistant general manager and had been production manager for the Maxwell Chalmers Co. He held a position with the Briggs Manufacturing Co. at one time. At the time of his death he was president of the Indian Village Club and held memberships in several other Detroit social organizations.

How national income paid out was divided



Senate Gets A. F. of L. Backed Bill To Control Business by U. S. Licenses

Dictated by organized labor, Senator Joseph C. O'Mahoney, Democrat, of Wyoming, formerly first assistant postmaster general under Postmaster General James A. Farley, last week introduced a bill to license industries engaged in interstate commerce.

Stringent in its requirements, including limitation of the amount of dividends that can be paid to stockholders, the measure has been proposed by the American Federation of Labor. Organized labor has said it is proposed to replace the NRA, but its provisions are much more sweeping than those of the Recovery Act. While there is doubt that it will be enacted, its support by organized labor gives it strength it obviously would not otherwise have. The Administration has not indicated whether it favors the measure, but if it is actually passed, industry is apprehensive that it would be given Administration approval.

The proposed law would be administered by the Federal Trade Commission whose membership would be increased from five to nine.

It would license all business and industry engaged in interstate commerce under Federal rather than state laws, guarantee the right of collective bargaining and make corporation directors trustees for stockholders, subjecting the directors to punitive damages for "unconscionable profits which such director may secure by means of his power to control the capital of the stockholders." A group of "corporation representatives" would be appointed to advise and represent minority stockholders, surpluses would be limited and when dividends exceed 10 per cent of the par value of the stock of a corporation, the amount over 10 per cent "may be divided among employees on a profit-sharing plan." Equal voting power would be given to all stock, and surplus would be limited in proportion to the number of employees of a corporation.

The bill was drafted, said Senator O'Mahoney, after conferences with Charlton Ogburn, counsel for the Amalgamated Association of Iron, Steel and Tin Workers and other union organizations, with representatives of the Federal Trade Commission and of other bureaus and with individuals.

Senator O'Mahoney contends that the bill provides for a constitutional method of regulating interstate commerce in such a manner as to maintain high standards of living for wages, to make possible the adoption of fair methods of competition in the basic trades and industries and to protect the investor from the obvious abuses of corporate control that, in his opinion, played so great a part in bringing about the crash in 1929. He said "it would solve the holding company problem by giving to the stockholders of the companies which are strangled in the holding company net the voting power to control their own capital." "It would also," he added, "mean a real distribution of the wealth of the country, not in the sense of destroying or distributing capital assets, but by providing for a more equitable distribution of national income." It would do that, he stated, because it would stimulate business.

Senator O'Mahoney said the Federal incorporation system provided in the bill "substantially is the same as that which was recommended to Congress in January, 1910, by former President Taft, redrafted to meet the modern situation."

Legal authorities which have studied the O'Mahoney bill state there is a marked difference between it and the proposal of President Taft. The former President, it was pointed out, had proposed a simple permissive statute under which any industry desirous of doing so could take out a national charter in order to escape conflicting types of regulation under different state charters. The Taft proposal carried no such restrictive measures as does the O'Mahoney bill as to control over corporation finances, voting power, etc., nor did it carry any labor provisions. It proposed a commission to adminster the law but the law was looked upon as being of a liberalizing character for business and industry rather than the contrary.

New Free-Machining Alloy Steels Contain Selenium

Alloy steels with free-machining properties due to a selenium content are a recent metallurgical development of importance. A U. S. patent on the alloy was issued to Frank R. Palmer on July 30, and was assigned by him to the Carpenter Steel Co., Reading, Pa.

The effect of selenium in improving the machining properties of steel was established by its extensive use in 8-18 chrome-nickel stainless steel in recent years. It has now been found that the same element also improves the machining qualities of practically all other iron and steel products.

Sulfur has long been used to improve the machining qualities of low-carbon steels known as screw stock. It combines with certain elements in the steel, particularly the manganese, to form sulfides, which occur in the form of slag-like stringers in rolled or drawn bars. However, high sulfur contents cannot be tolerated in alloy steels which must be heat treated and are subjected to severe stresses in service.

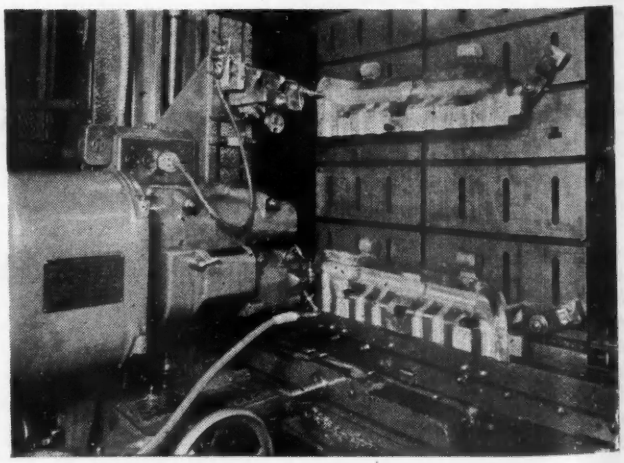
It is claimed that selenium is preferable to sulfur as an element improving the machining qualities of steel for two reasons: In the first place, a given selenium content does not produce nearly so much slag-like material as the same sulfur content; besides, selenium has a higher potency than sulfur as regards its effect in improving machining qualities, so that in practice a smaller percentage of selenium can be used. For this reason, selenium steels are much cleaner and more nearly uniform than high-sulfur steels of the same machining quality.

It is claimed that the presence of selenium does not interfere with the response of the steel to heat treatment. The experimental work carried out in the development work on these steels covers both low-carbon carburizing grades and high-carbon tempering grades, and at present it is being extended to both plain-carbon and alloy tool steels.

Offsetting the advantages of selenium over sulfur for this purpose, as outlined in the foregoing, are the greater cost of selenium and the fact that all selenium steel so far produced is melted in the electric furnace, which is a somewhat more expensive process. For these reasons the selenium-type free-cutting steel is rather more expensive, which will probably restrict its applications, for the present at least, to parts of which the machining cost is high in comparison with the amount of material involved.

Curtice Announces Buick No-Accident Campaign

Harlow H. Curtice, Buick president and general manager, has announced the inauguration of a special Buick no-loss-time accident campaign beginning this month and continuing until the close of the year. The success of the Wilson No-Accident campaign in the 26 GM divisions furnished the inspiration for the Buick effort. During the Wilson campaign Buick plants showed a gain of 63.7 per cent in no-loss-time accidents during April, May and June as compared with the similar months last year.



A Keller machine in the City Pattern Works set up for forming a metal pattern for a manifold core.

Buick's $14,500,000 Revamping Program For 1936 Production Nearing Completion

Buick's expansion and rehabilitation program, begun about 18 months ago and involving expenditures totaling $14,500,000, is nearing completion, according to a recent statement by Harlow H. Curtice, president and general manager. Mr. Curtice pointed out that part of this extensive program had been necessitated by the increase in parts production carried on at Buick plants for other General Motors divisions and that this phase of Buick activity has resulted in marked changes in the company's gray iron foundry and in the transmission plant where transmissions for other GM units are manufactured.

The present program involves complete modernization of all Buick factories, installation of new machinery, tools and equipment and the rearrangement of plant facilities in preparation for a substantially increased 1936 production schedule. Two other phases of the revamping program are the renewal of heavy machinery and equipment which either has been depreciated or discarded as a result of new manufacturing methods and processes and the retooling and re-equipping of various divisions for current production, which has required the largest outlays for such purposes in recent years.

A count revealed a total of 11,290 separate tool items of all types to meet the company's projected manufacturing requirements and 500 separate items in the machinery group. Revamping of the transmission plant required expenditures of nearly $2,500,000, and approximately $700,000 has been spent for new production equipment for forging crankshafts and camshafts, which includes the latest type of drop hammers, heat treatments and "pickling" installations. More than $1,080,000 has been spent in the engine factory, and about $750,000 was spent for new conveyors and similar modern equipment. Virtually every Buick division, of which there are 30, has been included in the expansion program. The largest expenditures went into the foundry, forge, sheet metal, axle, differential, transmission, motor and final assembly plants.

Streamlined Car Built by Morrison

Willard L. Morrison, manager of the Clark Equipment Co. plant for the manufacture of air-conditioning equipment at Buchanan, Mich., has built a car embodying numerous novel features, including that of streamlining of the body. The body is wide in front and tapers toward the rear, which permits of seating three persons in the front seat. The rear seat accommodates two. The windshield is set higher and farther back than in the conventional car, and is close up to the face of the driver, which gives him a greater field of vision. The steering wheel is under the cowl and forward of the windshield, which is considered a safety measure. An overhead mirror is provided with a reflector (periscope) and gives a wide field of vision toward the rear, without the possibility of obstruction by rear-seat passengers. The rear seat is set so low that it is impossible for the occupants to look through the high windshield except up into the air.

The spare wheel is so arranged at the rear of the car that it takes most of the shock in the event of a rear-end collision. To prevent the possibility of gasoline being stolen from the tank of the car, when the latter is locked, the filler cap, which is on the outside, is so arranged that it can be opened only from the inside.

The car is equipped with a Ford V-eight engine, but all other parts are special and Mr. Morrison has applied for patents on the original features.

Nagle & Sons Acquires Larger Toledo Plant

James E. Nagle & Sons, Inc., in the plating business since 1927, has announced the acquisition of a new and larger plant, to which it will complete moving by Sept. 15.

The company bought the former brick and steel plant of the Closure Service Co., subsidiary of Owens-Illinois Glass Co., located on Hawthorne Street not far from the Doehler Die-Casting Co. plant, for which company the Nagle firm does considerable plating work. The Nagle plant plans to double or triple its working force in the next few months.

James E. Nagle, Sr., is president; Edwin J. Nagle, vice-president; Richard J. Nagle, secretary-treasurer; James E. Nagle, Jr., and Donald C. Nagle, foremen.

Macklin Adds 50 Per Cent to Its Capacity

Macklin Co., Jackson, Mich., manufacturers of grinding wheels, has entered upon a building program which will add 50 per cent to its capacity and give the company a total of 70,000 sq. ft. of floor space for plant and office facilities. All departments are to be expanded and it is anticipated that the working force will be materially enlarged. Ground already has been broken and completion of the project is scheduled for late in September. The expansion was necessitated by a steady growth in the company's business and also was prompted by the improved outlook for business in general and particularly for the motor, implement, steel and building industries. Organized in 1927, Macklin at first confined its sales efforts to the immediate vicinity but since 1929 distribution of its products has spread until now the company maintains sales offices and warehouses in the principal cities of the United States, and a large direct sales organization.

Directors O.K. Merger of Inland and Ryerson

The board of directors of the Inland Steel Company and Joseph T. Ryerson & Son, Inc., the two leading Chicago steel companies, approved the merger of the two concerns Aug. 5. Combined assets of the two companies were given at $116,705,502. The merger places Inland Steel at seventh place in the industry. Approval by the stockholders and compliance with Government regulations still await action.

L. E. and P. D. Block, chairman and president of Inland Steel Company, and Edward L. Ryerson, Jr., and Everett D. Graff, president and vice-president of Ryerson & Son, Inc., announced that the Ryerson company will be operated under its own name and management as a wholly owned subsidiary of Inland Steel. Mr. Ryerson will be one of the principal executive officers of Inland Steel.

New IHC Service Branch

International Harvester Co., Chicago, is about to erect a model sales and service station for motor trucks in connection with its branch house at Green Bay, Wis., at a cost of more than $125,000, including $70,000 paid for a 100-ft. frontage adjacent to the present building. This is to be remodeled for sales and service on tractors and other units in its general line of agricultural equipment.

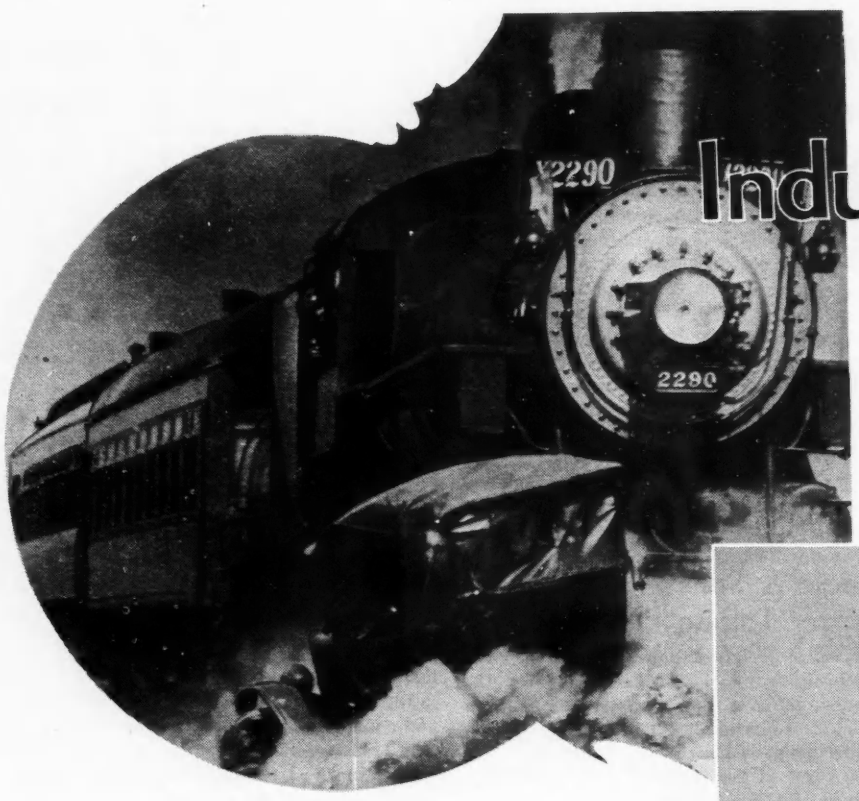
CALENDAR OF COMING EVENTS

SHOWS

Machine Tool Show—Cleveland..Sept. 11-21
New York Automobile Show, New York, Nov. 2-9
Detroit Automobile Show .....Nov. 9-16
Buffalo Automobile Show .....Nov. 9-16
Newark Automobile Show .....Nov. 9-16
Cincinnati Automobile Show ....Nov. 10-16
Philadelphia Automobile Show..Nov. 11-16
Baltimore Automobile Show ....Nov. 16-23
Minneapolis Automobile Show....Nov. 16-23
Columbus Automobile Show ....Nov. 22-28
Cleveland Automobile Show ....Nov. 23-30
Montreal Automobile Show .....Nov. 23-30
Kansas City Automobile Show, Nov. 30-Dec. 6
Automotive Service Industries Show—Atlantic City .....Dec. 9-13

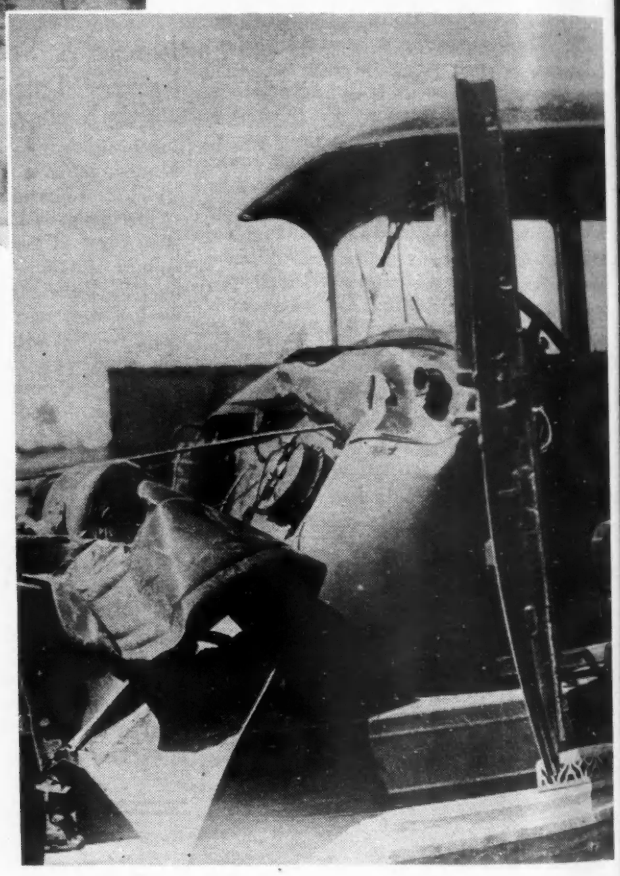
CONVENTIONS AND MEETINGS

American Chemical Society, San Francisco .....Aug. 19-24
S.A.E. National Production Meeting, Cleveland .....Sept. 18-19
National Industrial Advertising Association, Pittsburgh .....Sept. 18-20
American Transit Assoc., Bus Division, Atlantic City .....Sept. 23
National Assoc. Sales Finance Cos.—White Sulphur Springs .....Sept. 26-28
American Society for Metals, Annual Meeting—Chicago .....Sept. 30-Oct. 4
S.A.E. Transportation Meeting, Chicago .....Oct. 10
S.A.E. National Tractor Meeting, Chicago .....Oct. 10-11
National Safety Council, Louisville, Ky. .....October 14-18
American Gas Association—Atlantic City .....Oct. 14-18
Los Angeles .....Nov. 2-9
S.A.E. Annual Dinner, New York....Nov. 4
Newark, N. J. .....Nov. 9-16
American Petroleum Institute—Los Angeles .....Nov. 11-14
Philadelphia .....Nov. 11-16
International Acetylene Association, Cleveland .....Nov. 12, 13, 15
Baltimore .....Nov. 2-9
National Industrial Traffic League—Chicago .....Nov. 20-21
Columbus, Ohio .....Nov. 23-28



Industry Battles

by H. E. Gronseth
Detroit News Editor,
Automotive Industries



MOTOR car manufacturers are taking an increasingly important part in the campaign for safety on the highways. By radio and moving pictures, through the press and personal contact of vast service organizations, they are preaching the evangel of safety to the country's motoring millions.

Early this year, General Motors Corp. conducted over the radio a series of short talks on safe driving in connection with its symphony concert broadcasts. The talks were available at first only in mimeographed form but the strong interest that developed prompted their adaptation and publication in the form of a booklet called "We Drivers." Demand for the booklets came from safety directors, police departments, commissioners of highway safety, automobile clubs and a variety of sources. The first run of 150,000 copies was exhausted quickly. The second press run of 1,000,000 copies is almost wiped out, and another edition will be necessary. Indicative of the public's awakened safety consciousness, several thousand requests came from individuals. Bus operators are using the booklets for instruction to drivers. Commissioners of motor vehicles of two States have asked for several hundred thousand copies which are to be distributed to applicants for drivers' licenses. Two southern newspapers have asked to reproduce the booklet serially with illustrations.

As a further contribution to the safety movement, General Motors this spring ran in a leading national weekly a double page ad on the subject of safety. Captioned "We Can Engineer Every Safety Factor Into Our Cars Except Two—Road and Driver," the ad gave some interesting facts. For example: "the lowest ratio of accidents to cars on the roads was in 1926, when 60 per cent of the cars were less than three years old—today 22 per cent of the cars are less than three years old. In 37 per cent of all accidents, pedestrians are involved." General Motors of Canada also is conducting an institutional safety campaign with a series of ads running in a group of Canadian newspapers.

As a part of a vigorous campaign to teach the principles of safe driving, Plymouth Motor Corp. has just put out a motion picture under the appropriate title "Everybody's Business." The film, which is to be shown in thousands of motion picture theaters, dramatically presents the major causes of motor car accidents by analyzing the reasons be-

Dumb Driving on Broad Front

Leading companies actively promoting education of motorists into safer driving habits to cut accident toll

hind them. The film also will be shown by automobile dealers and distributors, by police departments as a feature of safety campaigns, by schools, colleges and clubs.

Barney Oldfield, veteran race driver, is conferring with Plymouth officials about plans for a national tour this summer in the interests of safety education. "A mile a minute," says Oldfield, "is fast enough for anyone to go anywhere at anytime of day or night on present-day public highways."

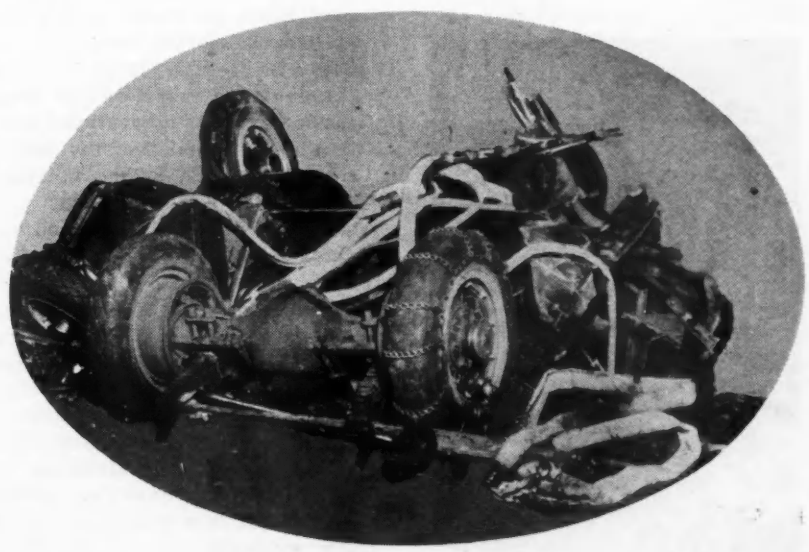
Hudson Motor Car Company, this month, is mobilizing its national distributor and dealer organization for the purpose of sponsoring a nationwide safety campaign known as "National Safety Month." Hudson representatives in practically every important city and town will contact city and civic leaders and turn over to them plans and materials for conducting a month-long safety campaign. Throughout August, free "Safety First Inspection" will be offered to all motor car drivers. Vital parts of cars will be checked for wear, defects, looseness and other hidden hazards which might lead to accidents. A booklet containing rules for safe driving, so dramatized as to make interesting reading, will be distributed to motorists throughout the country. Leading writers, radio newscasters, newspaper editors and officers of oil companies have been requested by Hudson to support the movement.

Thirty-six thousand automobile fatalities and one million non-fatal accidents last year have focused public attention on traffic dangers as it never has been before. Drivers as well as pedestrians have become more receptive of safety suggestions. Hence, safety campaigns are giving prominence to education rather than to the pressure of law enforcement. There need be, and should be, no relenting in the efforts of the law, but experience has shown that voluntary cooperation of drivers, enlisted through educational campaigns, is far more effective in curbing the great American scourge of traffic accidents.

An epidemic that takes a toll of one life every 15 minutes calls for decisive action. Everyone agrees that something should be done about it. Many would leave it all to the police. Some would place the responsibility wholly in the laps of the car manufacturers. Others want more and stricter laws. Inevitably, restrictive and perhaps ruinous legislation would be the outcome of further neglect of the problem. Those whose business interests are involved are awakening to that realization. Aside from the humanitarian angle, they are finding that it is good business to intensify their activities in the field of safety promotion. Insurance companies have economic reasons for keeping down the accident rate. Manufacturers of automobiles, tires and accessories, as well as the oil companies, would be directly affected by unwise legislation that tended to restrict the sale of cars. Because of its wide interest, the safety subject, moreover, provides a splendid vehicle for carrying institutional messages or even direct sales promotion.

It is not likely that the manufacturers will take any group action in the safety movement but there are many indications that individual efforts will be increased. There has been incessant pressure of late from various quarters to have motor companies stop talking and advertising speed, and it is noted that automobile ads do not give the speed note its former prominence but are playing up, more and more, the subject of safety.

From the engineering and production standpoints, car manufacturers certain-

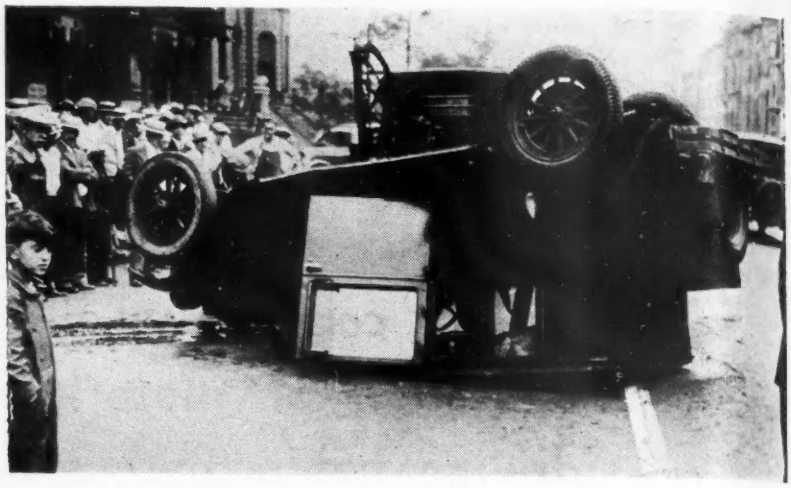


ly have not overlooked the safety factor. Most of the important developments in connection with automobile design have been contributions to safety. Steel bodies, four-wheel brakes, safety glass, improved tires, scientific load distribution, syncro-mesh transmission and tilt beam headlights are typical of what has been done by car makers to promote safe driving. Even the more recent comfort features such as knee-action wheels and floating power, by reducing fatigue, tend to lessen driving hazards.

But it must be remembered that many of the cars on the road today do not have the more recently developed safety features. Some are at a disadvantage on the get-away and in passing. Others in the ability to stop quickly. Over 21 per cent of the cars in use do not have four-wheel brakes. More than 66 per cent of the cars do not have any safety glass.

It is true, however, that along with increased power and speed have come new safety developments, both in automobiles and highways. In the march of progress, only the driver has remained the same. And after all, he is the most important factor since he, and not the car, is responsible for more than 80 per cent of traffic accidents.

There are more defective drivers on the road than defective cars. And the accident promoters as a rule are not the inexperienced drivers but more often than not the good driver with a good car but with a lack of respect for the dangers involved in high speed driving. To quote from the General Motors' *Buyers Guide*, "When you take your position behind the wheel of the modern car, you have at your personal and instantaneous command more power than was available at the finger-tips of any human being in the world, up until just a few years ago."



The automobile itself is only one element in our modern system of individual transportation, a motor official points out. "Thus," he said, "in addition to the 'rolling stock,' the system involves highways, traffic signals, rules and regulations—and last but not least, the individual driver, his aptitudes, his training, and his ethical outlook.

"So it would appear that the safe, sane, and efficient operation of this highly complex system of individual transportation is the joint responsibility of the manufacturer, the driver, the pedestrian—those responsible for the building of our highways and the control of the traffic that runs over them. It is also the responsibility of our educators because the most constructive and permanent progress can only be attained through the proper training of the youth of the land in whose hands rests the future safety of our streets and highways."

After all, the State which largely was responsible for putting the country on wheels may be the one to show the way to a lasting solution of the safety problem. Michigan is said to be the only State in which a thorough and systematic effort is being made to educate the child from kindergarten through high school on the subject of traffic accident prevention. And here it is not a function of the State but a service rendered by the Detroit Automobile Club which has taken a leadership well worthy of emulation by other automobile clubs if not by the various State governments.

Through its Safety and Traffic Division, the club in 1927 started contacting teachers and today is furnishing 4500 schools every month with loose-leaf lessons, bulletins and posters, and every teacher in the State is busy building safety consciousness in the new generation, a work that already is bearing fruit in a marked reduction in traffic accidents.

From 1569 persons killed in traffic accidents in Michigan during 1930, the number has dropped to 943 in 1934, a reduction of approximately 40 per cent. No doubt there were many contributing factors but the campaign among school children is credited with a good deal of the improvement. It is the experience of safety directors that the parent can be educated through the child, whereas many years of effort in educating the child through the parent have been unavailing. It is found that children effectively spread the gospel of safety among their elders in the home.

Those in charge of this work are of the opinion that law enforcement probably could prevent further increase in traffic accidents but they have little faith in the law's ability to accomplish important reduction. They hold the theory that it is necessary to develop the subconscious mind to proper impressions to obtain prompt and correct reactions in emergencies and this can be done best by starting with the child of pre-school age who first is taught the most elementary rules of self-protection, the instruction advancing with the child's age to cover, in high school years, rules of safe driving, traffic laws and instructions on car operation.

Some 24,000 pupils are members of 1375 safety patrols in Michigan schools, and in addition over 9000 girls are members of 391 Girls Service Squads who work indoors among the smaller children. A very noticeable result of the club's work has been the development of a more wholesome attitude on the part of young people toward traffic laws and a more distinctly safety-minded generation. A considerable number of pupils in the State have had the benefit of this instruction throughout their elementary school life and are now in high school. Among this group the club this year is starting an extensive campaign to organize traffic clubs.

Just Among Ourselves

Motor Carriers Under Uncle Sam

BEGINNING Oct. 1, interstate motor carriers will be subject to federal regulation by the Interstate Commerce Commission under the provisions of an act which the President found terribly long and frightfully confusing as he perused it prior to affixing his signature. Thus endeth one of the longest and most bitterly contested legislative battles in recent history.

For years the railroads have contended that interstate motor carriers had a competitive edge on them because they were not subjected to federal regulation and that the way to provide competitive equality was to shackle the motor carriers with the same sort of restrictions which in many ways have hampered the railroads. Now that the railroads have won this point it is not too much to hope that they will stop complaining and start competing.

It is going to be interesting to watch the effect of this new legislation on railroad finances, particularly in view of the relatively small volume of highway traffic even if such traffic is often, as the railroads contend, the cream of the business. In 1934, it is estimated that railroad freight traffic amounted to 275 billion ton-miles while in the same year *all* trucks accounted for about 20 billion ton-miles. However, only 14.2 per cent of the trucks are in common or contract carrier service, and only a portion of these operate interstate. In the passenger field, buses bulk very much larger, accounting for about 13 billion passenger-miles last year, only a portion of which was interstate against about 19 billion for the railroads. Whatever portion of this traffic can be forced back on to the railroads by federal regulation, will mean that much more gross revenue for them, but on the surface at least it does not appear that an important addition to gross revenue can result.

The appointment of Joseph B. Eastman, Federal Coordinator of Transportation, to head the I.C.C. division regulating motor carriers, is an assurance that the law will be intelligently administered. But the job is not going to be any easy task. Experience with intrastate regulation indicates the difficulties to be overcome. These difficulties are likely to prove even more serious on a national scale, despite the fact that the new law will be backed by the strong arm of the federal government.

* * *

Higher Taxes Now, Lower Taxes Later

WE don't like paying taxes any more than the next fellow, but we got some short-lived satisfaction out of the Senate Finance Committee decision, which it later reversed, to broaden the base of personal income taxes by reducing personal exemptions and starting surtaxes at $3,000 instead of $4,000.

If Uncle Sam is to continue spending at the present rate, there is no question that he needs more revenue—a lot more than the original Senate proposals would have yielded, even though it is estimated that they would have brought in nearly twice as much as the House measure.

However, more important than the increased revenue, as we see it, is that the personal income schedules which the Committee first adopted and then rejected would have required more people to pay more taxes. That means more squawking about high taxes and hence more political pressure to curtail spending. And obviously it is only by curtailing spending that the Federal budget can be balanced.

But the squawking began so quickly and grew in volume so rapidly that the Committee lost no time in reversing itself.

* * *

No Profits in Manufacturing

"THE result for the six years 1930-1935 combined for all manufacturing corporations in the United States, numbering about 90,000," the National City Bank reports, "will be no net return whatever on invested capital, which aggregated $52,695,000,000 in 1929 and had shrunk to $43,976,000,000 by 1932 (latest official figures available), but a substantial loss instead, in addition to which there has been a heavy writing-down of property and working assets not carried through the profit and loss accounts but charted directly to capital and surplus. . . . All of the expansion in industrial capital during 1925-1929 has been wiped out during the depression."

Evidently the surpluses—some of which would come within the President's category of "unwieldy and unnecessary"— built up by these companies during the fair weather of the "twenties" stood the nation in good stead for they enabled these companies to pay out in wages, dividends, etc., more than they took in. The economic importance during the depression of the purchasing power thus distributed cannot be over-estimated. —D. B.

A New Technique and Apparatus fo

WITH the equipment for testing Diesel fuels described in this article, the moment of ignition in the modified C.F.R. test engine is determined by a mechanism comprising a pressure diaphragm in the cylinder wall, the electromagnetic unit of a radio speaker at some distance therefrom, and a short, stiff wire transmitting the motion of the diaphragm to the armature of the electromagnetic unit. Movements of the diaphragm in conformity with pressure variations in the cylinder cause an electromotive force to be induced in the coil of the electromagnetic unit. This e.m.f. is applied to the grid of a Thyratron tube, which latter has the property that when a sufficient negative e.m.f. is thus applied, the tube discharges. In this case the discharge is directed through a neon lamp, which, as is generally known, has no inertia and lights up instantly. When ignition occurs in the cylinder the velocity of diaphragm motion is sufficiently high so that the voltage generated in the coil of the unit will trip the Thyratron tube, hence the lighting up of the neon tube signals ignition in the engine cylinder. A slight lag would be expected, of course, from the inertia of the diaphragm, armature and connecting pin, but since all of these units are designed for minimum inertia and small motion, the effect probably is negligible.—Editor.

THE Midgley bouncing pin is in general use for knock-testing gasolines. The rougher the fuel, the more the pin bounces and the more current flows through the contacts closed thereby. When the bouncing pin was adapted for testing Diesel fuels, it was intended to register the time of ignition. The "roughness" of a Diesel fuel is closely related to its ignition lag, that is, the time lag between injection and ignition. To register the time of ignition, the conventional bouncing pin was changed so it would break the contact instead of making it. The breaking of the contact is supposed to occur at the moment when ignition takes place.

There are theoretical and practical reasons for the unsatisfactory action of the bouncing pin as an ignition indicator. Theoretically, the breaking of the contact is not indicative of the time of ignition, as will be explained at the end of this article. In practice the bouncing pin was found to give erratic readings, whether it was used in conjunction with a knockmeter or with a neon lamp protractor. Not only could such readings not be reproduced from day to day, but they even changed erratically during one test. This erratic behavior of the bouncing pin was traced partly to friction between pin and barrel and partly to arcing between the contact points—both irregular and difficult to control.

To indicate the time of ignition in tests on the C.F.R. Diesel fuel testing engine at the Pennsylvania State College, the bouncing pin was replaced by an electromagnetic unit such as is used in magnetic-type radio speakers. A short stiff wire resting on the diaphragm transmits the motion of the diaphragm to the armature of the unit. The voltage generated in the coil surrounding the armature is used to control the operation of a Thyratron tube. When the velocity of the diaphragm is high, as at the time of ignition, the Thyratron relay trips and causes a neon lamp to flash. The timing of the flash is read on the protractor.

The circuit is shown in Fig. 1. The left-hand part of the circuit merely supplies high-voltage direct current for the Thyratron unit. The current generated in the armature coil reduces the negative voltage on the grid of the Thyratron tube, thereby causing it to conduct. The current thus passing to the plate of the tube goes to a high-tension coil, which in turn sends a flash through the neon lamp.

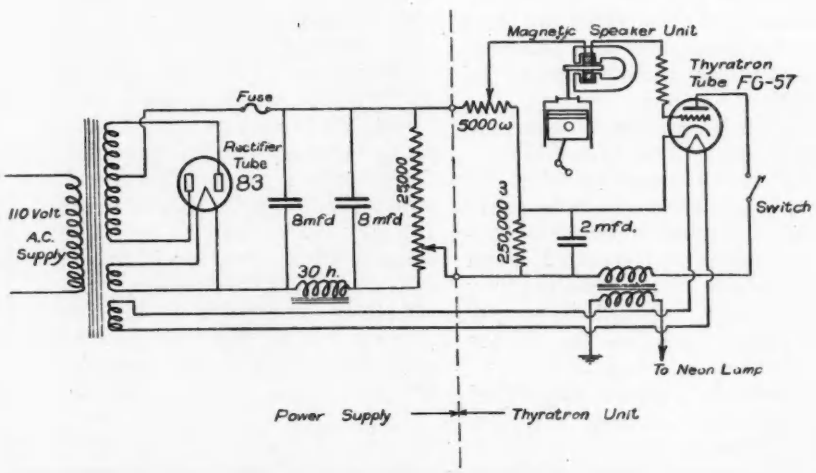


Fig. 1—Wiring diagram of Penn State electrical ignition indicator

for Testing Diesel Fuels

by T. B. Hetzel and
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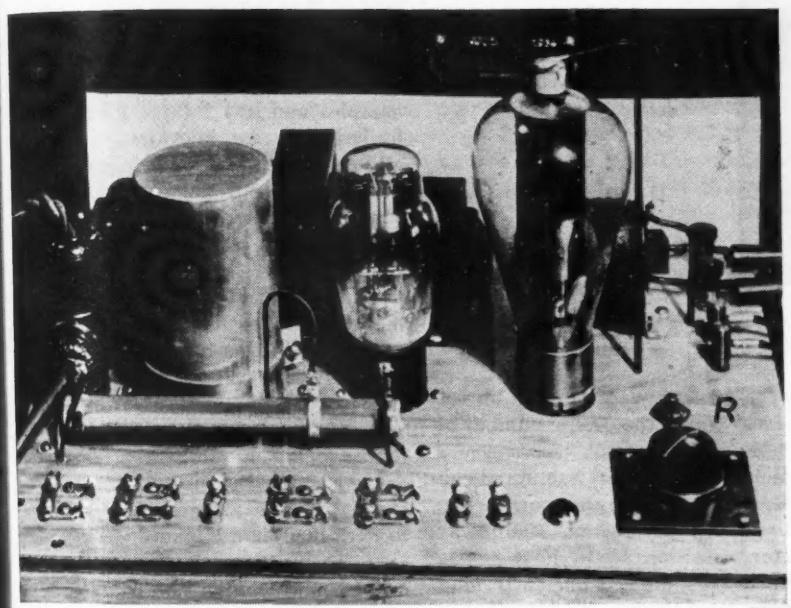


Fig. 2—(Above) Thyratron relay of electrical ignition indicator

With this arrangement the neon lamp flashes when the rate of pressure rise in the cylinder reaches a certain magnitude, which can be adjusted by means of resistance *R* in Fig. 2. At any other time of the cycle the voltage generated is insufficient to trip the Thyratron relay, and the neon lamp remains dark. The mechanism is practically frictionless. No electric contacts are used, therefore troubles with arcing and pitting are eliminated. The wire and armature, having a very high natural frequency, do not bounce, but follow faithfully the motion of the diaphragm. The timing of the neon flash corresponds to the predetermined rate of pressure rise in the cylinder.

The electrical ignition indicator built on this principle is shown in Fig. 3. With this apparatus readings were so consistent that instead of using the regular protractor, a neon lamp was mounted on the flywheel, which, with the larger scale shown in Fig. 4, about quadrupled the accuracy of the readings and permitted the operator to read the angles conveniently in a standing position. The readings were surprisingly insensitive to alterations in the position of the wire and the pressure with which it bore down on the diaphragm.

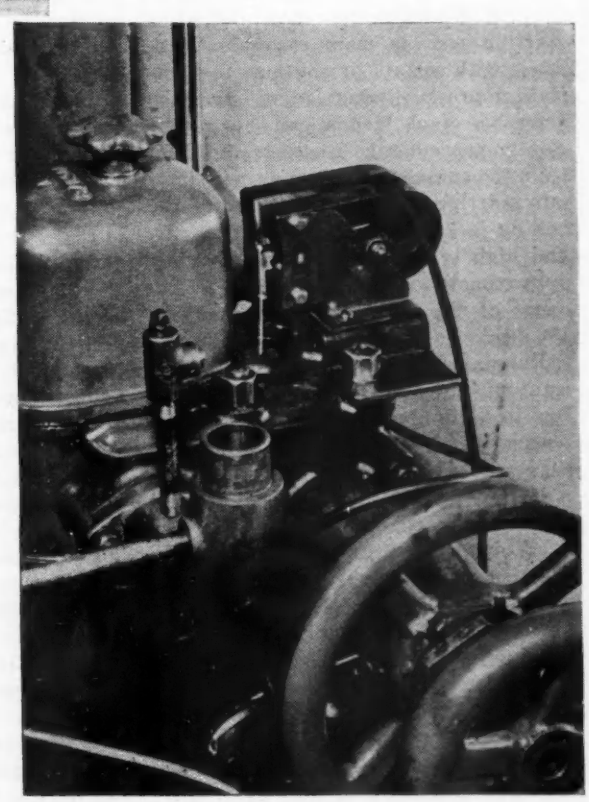


Fig. 3—(Right) Penn State electrical ignition indicator mounted on C.F.R. Diesel fuel testing engine

Method of Rating

Although the electrical ignition indicator can be used for fuel rating with conventional methods, the technique we have adopted for rating Diesel fuels differs somewhat from the conventional. The conventional ignition lag method is rather laborious, because each fuel to be tested must be closely bracketed by two reference fuels. The data obtained from the reference fuels when rating a given sample are useless in obtaining

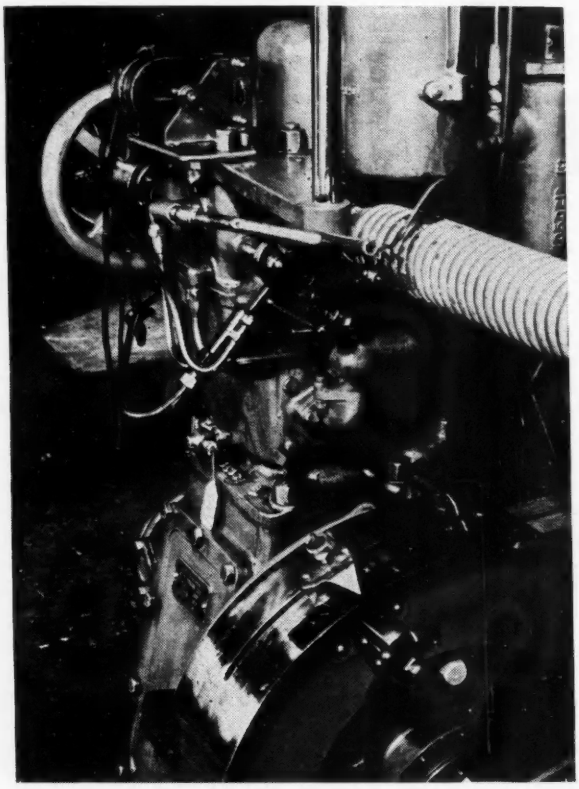


Fig. 4—C.F.R. Diesel fuel testing engine with flywheel type Neon protractor

The electrical ignition indicator is shown in the upper left corner.

the rating of another sample because the relation between cetene number and knockmeter reading (or cetene number and ignition lag) is not permanent but variable. Thus *at least* three fuels in all must be tested for each rating obtained.

The motoring method, also called the critical-compression-ratio method or starting test, is more convenient, because with certain precautions the critical-compression-ratio curve for the reference fuel blends can be rather closely reproduced. However, in these tests the engine conditions do not simulate starting conditions, because of the boiling jacket water, heated intake air, and high cranking speed; nor do they approximate running conditions, because of the ignition lag approaching 180 deg.

Running tests should be more significant of the actual performance of a fuel in a running engine; therefore, in search of simplification, a procedure suggested by the now defunct SAE-ASME Diesel Fuel Research Committee was adopted. Setting the injection at 17 deg. before top center, the compression ratio was varied until ignition was registered at top center. The compression ratio thus obtained with each blend of reference fuels over a wide range of cetene numbers was plotted as in Fig. 5. The sample fuel to be tested was then run under the same conditions and the compression ratios so determined (injection as —17 deg., ignition at top center) were marked on the curve, from which the cetene number of the sample could be read.

Ignition at top center was standardized because service engines at normal speed usually have ignition at or near top center. Ignition lag of 17 deg. was chosen because that is sufficiently long so that the compression ratios of poorer fuels would not be abnormally high and yet short enough to be in line with ignition lags of service engines. Other engine conditions were: 100 deg. F. intake air, 210 deg. F. jacket water, 600 r.p.m., 0.023 c.c. injection quantity, 1800 lb. per sq. in. valve opening pressure.

Fig. 5 shows the individual ratings of seven different fuels as obtained on three different days. The average variation hardly exceeds one cetene number, if for each series of tests the corresponding day curve is used. For approximate ratings a permanent calibration curve could be used, instead of making a new determination of the curve each day. This would introduce an error probably less than ±2 cetene numbers.

The same seven commercial fuels were also rated by the motoring C.C.R. method (600 r.p.m., 15 injections 0.023 c.c. injection quantity, 12 deg. injection advance, 210 deg. F. jacket water, 100 deg. F. nozzle jacket water, 100 deg. F. intake air, 140 deg. F. crankcase oil). A comparison of the averages of three separate ratings by the motoring C.C.R. and by the fixed ignition lag methods is as follows:

Fuel	C.C.R. Method	Fixed Ignition Lag Method
A	68.3	67.3
B	58.0	57.9
C	53.3	46.3
D	64.3	63.8
E	65.0	63.5
S	54.7	55.2
V	53.7	51.8

The agreement for all except fuel C is quite good. When testing by either method, it is obvious to the ear that fuel C is the poorest fuel of the lot, quite inferior to V, yet this was not indicated by the C.C.R. test; in fact, one day's rating by the C.C.R. method gave C a higher rating than V. Similarly, it was difficult to distinguish between V and S by the C.C.R. method, yet in the running engine the combustion of V is perceptibly rougher.

It is believed that the described method of rating Diesel fuels offers substantial advantages. Smaller fuel samples and less reference fuel are required than for knockmeter or manually controlled C.C.R. tests, and what is more important, the rating can be accomplished more quickly, especially when a number of fuels are to be tested the same day.

The electrical ignition indicator is more accurate than the bouncing pin, and is also less sensitive to misadjustment. Although not of decisive importance, it may be of interest to compare the electrical ignition indicator with the bouncing pin on a theoretical basis.

In Fig. 6, the heavy line *a-b-c-d-e* represents the pressure line of a time-basis indicator diagram. It also represents the motion of the diaphragm to an enormous scale. The position of the

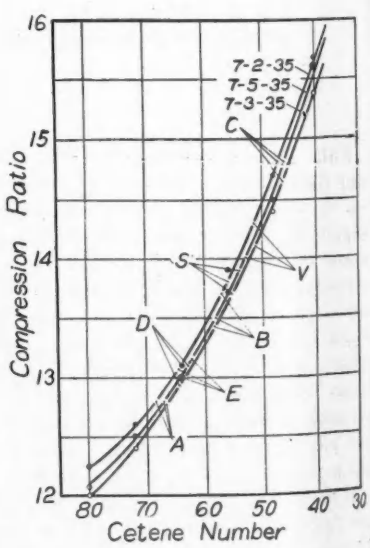


Fig. 5—Seven fuel samples rated by the fixed ignition lag method

Each fuel was tested on three different days. The three day curves for the reference fuels are shown.

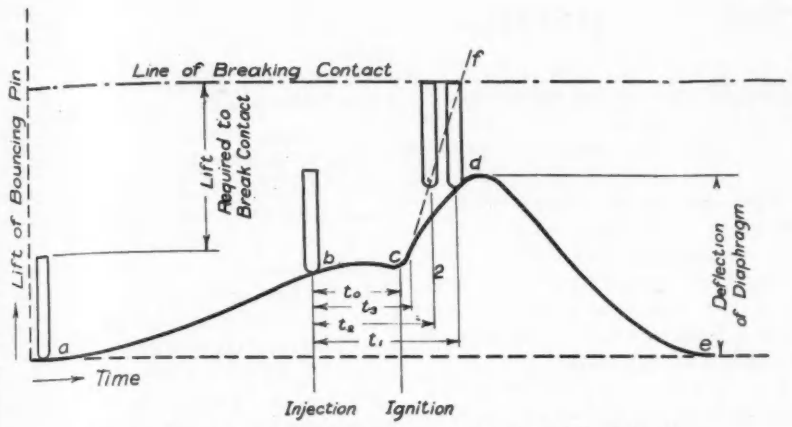


Fig. 6—Motion of the bouncing pin in Diesel fuel testing

bouncing pin is shown in several phases, and the dot-dash line shows the height to which the top of the bouncing pin must bounce in order to break contact. At *a* the bouncing pin is at rest preceding compression. At *b* injection takes place, and at *c* ignition. During compression, the bouncing pin follows the diaphragm accurately, but its behavior after ignition will depend on its weight and spring load. If the pin is light or the spring stiff, it will follow the motion of the diaphragm and break contact in position *1*. Then it is really a "non-bouncing pin." If the pin is heavy or if the spring load is light, the pin will fly off the diaphragm along the line *c-f* and break contact at *2*. The ignition lag registered in the former case will be t_1, in the second case it will be t_2. The true ignition lag is something like t_0. The ignition lag actually read will be something between t_1 and t_2, depending on the clearance, weight, spring, friction and arcing.

With the electrical ignition indicator, there is no clearance, and the neon lamp flashes the moment the diaphragm flexes at the rate of, say, *cf*. The ignition lag registered will be something like t_3, which hardly differs from t_0, the "true ignition lag."

The development of the electrical ignition indicator was inspired to a certain degree by R. Stansfield of the Anglo-Persian Oil Company, in whose laboratories one of the authors had a very profitable visit last winter.

The Forum

Distribution of Cylinder Wear

Editor AUTOMOTIVE INDUSTRIES:

Mr. Heldt's article regarding wear distribution in cylinder bores in the July 20 issue of AUTOMOTIVE INDUSTRIES is most interesting, but we do not agree with his findings that cylinder wear is uniform around the bore. My sole purpose in writing this letter is with the thought of shedding a little more light on the very elusive subject of cylinder wear.

Quite a number of years ago, in measuring cylinders from L-head engines, I found that almost invariably the wear was eccentric. Your data, I assume, are taken from diametrical readings which would not necessarily show eccentricity and might indicate that the wear was uniform around the bores. My experience has been that the wear is highly eccentric, with practically none occurring on the maximum thrust side. In fact, I have seen some bores worn as high as 0.010 in. when measured diametrically, yet on the maximum thrust side the original machining marks were still visible. When measuring diametrically the fore and aft wear and side wear were nearly equal. We believe this is due to locking of the ring in the piston.

On the compression stroke the piston is held against the minimum-thrust face up to the time when the crank swings across the top center. At a slight angle before top center the pressure builds up rapidly and tends to lock the ring in the piston groove. When the thrust is reversed the ring is forced deeper in the groove on the maximum-thrust face and carried away from the cylinder barrel on the minimum-thrust face. The gas then blows or burns the lubricant so that when the pressure equalizes and allows the ring to come back against the bore it comes back on a dry surface and then starts building up a new oil film. In looking at it from this viewpoint, variables such as abrasives, etc., are not considered. This fits in with Mr. Godron's theory from which he developed his balanced compression ring.

Your data regarding the Studebaker tests, I believe, substantiate the above-since they were operating at speeds where the cylinder pressures were relatively low and it is concluded that under these conditions the ring is not subjected to pressure sufficiently high to cause locking. Of course, one must consider all the other factors such as corrosion, abrasives, etc., but these can be more or less explained, whereas I have never had the eccentric wear condition fully explained.

V. C. YOUNG,
International Motor Co.

It would be interesting to hear from other readers having had experience along this line.—EDITOR.

(*Turn to next page please*)

Cylinder Wear and Jacket Temperature

Editor AUTOMOTIVE INDUSTRIES:

I was much interested in reading the article in *Automotive Industries* for July 20 on the subject of distribution of wear in internal combustion engine cylinder bores.

I am convinced from my observations that the principal cause of the wear in cylinder bores is from corrosion accelerated by low cylinder wall temperatures. Supporting this is the common finding that the extent of the wear is frequently much greater, by as much as 100 per cent, at points where the cooling water enters the block. Instances of this are commonly noted in the case of the Model A Ford engine, the wear being greatest in cylinder bores Nos. 2 and 3 and in the direction as measured on a line pointing toward the water inlet.

In other engines where water enters at the front end of the block, No. 1 cylinder commonly shows greater wear than the other cylinders. This is particularly the case where engines are operated a large portion of the time at relatively low temperatures.

I think that if you will check this up with some other operators you will receive confirming reports.

S. B. SHAW,
Automotive Engineer,
Pacific Gas & Electric Co.

Cerium Used in New Ni-Al Alloy

A NEW nickel-aluminum alloy known as "Ceralumin C" has been developed in England, where it is being produced commercially by J. Stone & Co. of London, according to an item in *Inco*. While it resembles other alloys in the nickel aluminum group in composition, it differs from them in containing a small proportion of cerium, one of the rarer metallic elements.

Analysis of the alloy, which is covered by British patents, shows copper 2.5 per cent, nickel 1.5 per cent, magnesium 0.8 per cent, iron 1.2 per cent, silicon 1.2 per cent, cerium 0.15 per cent, and aluminum 92.65 per cent.

Investigations in the Stone Company laboratories indicated that, in addition to its refining action on the microstructure, cerium allows the beneficial mechanical effects of a high iron content to be obtained by suppressing the embrittling iron-aluminum constituent which is otherwise likely to be formed. In addition the investigations seemed to indicate that the small amount of cerium also confers on the alloy numerous advantages in the foundry; "Ceralumin 'C'" has extremely good "running" properties and gives castings having a smooth, clean surface and an attractive appearance.

The heat-treatment applicable to this alloy is quite simple. The castings are maintained at the solution temperature of 960-995 deg. Fahr. for 4 to 6 hr. and then quenched in water; aging is achieved by heating to 345 deg. Fahr. for 16 hr., followed by quenching in solution temperature is no greater than that involved, for example, in heat-treating "Y" alloy (Cu—4 per cent; Ni—2 per cent; Mg—1.5 per cent; Al—Bal) at 970 deg. Fahr., and careful measurements on castings having water. The risk of distortion at the unfavorable features, such as overhung arms and bosses, have failed to detect any distortion as the result of heat-treatment.

In the heat-treated condition Ceralumin "C" presents a combination of high tensile strength at ordinary and elevated temperatures, high elastic limit, high Brinell hardness and exceptional fatigue strength of 18,500 lb. per sq. in. at 20,000,000 cycles.

Ceralumin "C" is suitable for high-duty service in the form of die-castings, chill castings and sand castings, and it is anticipated that it will find a useful field of application, particularly in the aircraft and automobile industries.

If after quenching the ageing treatment described above is omitted, ageing at room temperature takes place, and after five days a modified form of the alloy is produced which is called Ceralumin "D," having somewhat lower tensile strength but increased ductility. This modification of Ceralumin is intended for purposes where extra toughness is required in castings, such as for shrinking-on cylinder heads where heavy stresses may be set up and a little "give" in the casting is essential.

PROPERTIES OF CERALUMINUM C.

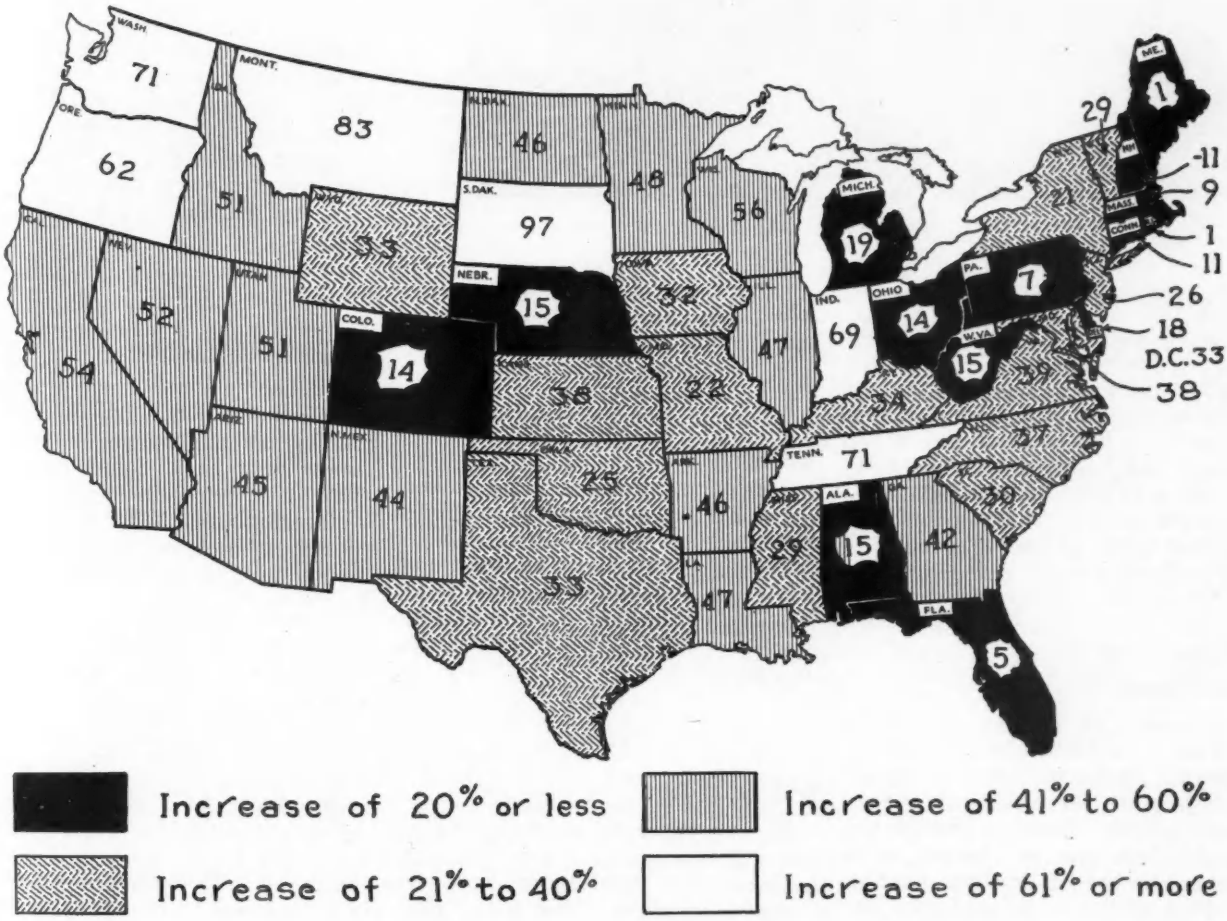
	Yield Strength (0.1 Per Cent Set)	Tensile Strength, Lb. per Sq. In.	Elongation* (Per Cent)	Brinell Hardness Number
CHILL-CAST:				
Fully heat-treated	47,000–54,000	52,000–60,500	1.0	130–140
Quenched and aged 5 days at room temperature	29,000–32,000	42,500–47,000	4–6	98–104
As cast	25,000–27,000	29,000–32,000	1–3	67–77
SAND-CAST:				
Fully heat-treated	40,000–45,000	42,500–45,000	0–1	130–140
Quenched and aged 5 days at room temperature	25,000–29,000	32,000–36,000	1–3	98–104
As cast	.....	20,000	0–1	72

*The gage length is four times the square root of the cross sectional area. In other words, for a specimen diameter of 0.505 in. the gage length is 1.789 in.

British May Bar "Ribbon-Building"

ONE problem that has arisen in connection with the development of motor traffic in Great Britain is that of "ribbon building." In order to obviate unnecessary congestion in large cities a good many by-pass roads have been built. But it has been the experience that as soon as such a road is completed, buildings go up along both sides of it, and after a short time of such "ribbon building" the road, which was specially intended to lead through an undeveloped section, virtually leads through built-up territory. The subject was brought up in Parliament recently, and in reply Premier MacDonald said that while a bill had been prepared, the Government was not in position to introduce it before it could put before the House proposals which would effectively deal with the problem with due regard to all interested.

Western States Lead in Increases in Truck Sales During First Half



Increase of 20% or less

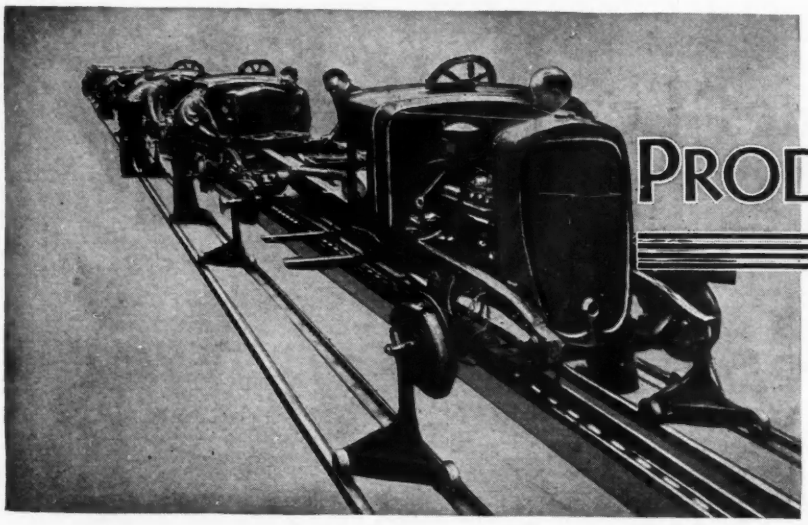
Increase of 21% to 40%

Increase of 41% to 60%

Increase of 61% or more

New Commercial Car Registrations by States First Six Months of 1935 and 1934 Compared

	1935	1934		1935	1934		1935	1934
Alabama	3,761	3,286	Maine	2,468	2,442	Oklahoma	5,516	4,414
Arizona	1,467	1,012	Maryland	3,402	2,472	Oregon	2,834	1,745
Arkansas	3,272	2,247	Massachusetts	7,866	7,223	Pennsylvania	15,062	14,076
California	14,001	9,126	Michigan	10,325	8,669	Rhode Island	1,109	1,096
Colorado	2,819	2,468	Minnesota	6,519	4,400	South Carolina	2,644	2,034
Connecticut	3,365	3,039	Mississippi	2,671	2,051	South Dakota	1,553	789
Delaware	728	619	Missouri	8,714	7,132	Tennessee	4,759	2,783
Dist. of Col.	1,133	851	Montana	3,091	1,686	Texas	16,411	12,323
Florida	3,987	3,817	Nebraska	3,198	2,795	Utah	1,653	1,091
Georgia	5,786	4,068	Nevada	475	312	Vermont	1,292	1,003
Idaho	2,025	1,345	New Hampshire	1,353	1,518	Virginia	5,909	4,268
Illinois	12,173	8,287	New Jersey	6,982	5,536	Washington	4,351	2,540
Indiana	8,755	5,180	New Mexico	1,650	1,145	West Virginia	3,373	2,941
Iowa	6,731	5,101	New York	18,615	15,405	Wisconsin	6,711	4,310
Kansas	5,366	3,889	North Carolina	6,591	4,830	Wyoming	967	725
Kentucky	4,490	3,358	North Dakota	1,538	1,059			
Louisiana	3,186	2,165	Ohio	11,416	10,073	Totals	254,063	194,744



PRODUCTION LINES

Alky Power

On the eve of new drives to legislate gasoline-alcohol fuel blends, making the use of straight gasoline unmoral and illegal, the API has issued a little booklet giving the facts pro and con. No matter what you think of the situation, this booklet has some facts that should be of interest. Ask us for "Power Alcohol." It's technical, not political.

Sun Power

According to reports, Dr. Colin G. Fink, electrochemical wizard at Columbia University, is working on a project to get electrical energy from the sun. Here is one of the age-old ideas that will be subjected to the inquiry of modern science. Dr. Fink is known to many of you for his researches in electroplating. His biggest contribution to industry is the definition of the bright plating range in chromium plating. United Chromium can tell you a lot about it.

Anti-Freeze

A new carburetor organization will make an appearance very shortly. Two items in the line are of particular interest. First is a carburetor for aircraft engines—quite unorthodox both in looks and operation. Its chief bids for attention are freedom from freezing and complete absence of fire hazard which is ordinarily occasioned by carburetor drainage. It is so designed as to cut cost materially. The other carburetor is intended for passenger car and truck engines and is laid out along more conventional lines, although it, too, will have some special features.

Theft-Proof

One of the prominent lock makers out here has developed a cylinder lock that is said to be absolutely theft-proof. The trick lies in a drill proof metal sheath. The lock is intended for ignition and tire mountings which are most susceptible ordinarily.

Many Styles

If you think that scheduling of passenger production is a headache consider the problem at the new Dodge truck plant. They tell us that on the standard line alone there are over 25,000 combinations of mechanical options. If special jobs are considered or if you take into account the small details, the number of schedule options runs into an amazing total. That's why it takes a lot to run a truck plant producing 500 units per day.

Fine Grinding

We saw a remarkable grinding operation recently which may be of interest even though it is being used in the production of a refrigerator part. Problem was to grind the thrust face of an end bearing on a small crankshaft—an annular ring about 1 in. in diameter and ⅛ in. in width. That isn't much of a problem you'll say. But consider that the face must be so smooth and perfect as to match with an optical flat. The job has been licked with a special grinding machine. It is massive, motors are mounted on independent pedestals to eliminate vibration, and a special spindle is used. We shall be glad to give you further details.

Hundred Below

In the production of Duprene—synthetic rubber—DuPont is producing an atmosphere of 100 deg. below zero on a commercial scale. This low temperature is used in separating one of the chemical components of acetylene gas which is required for the manufacture of synthetic rubber.

The Low-Down

Fifteen technical papers with discussion which comprised the activity at the recent A.S.T.M. regional meeting are published in "Symposium on Paint and Paint Materials," just off the press. This publication should be of interest to the paint technologist and those interested in the use and testing of paints. Copies may be obtained from the A.S.T.M. in Philadelphia at $1.50, bound in paper.

Spokes Pass

According to what we hear, the last large production wire-spoked wheel is due to pass out of the picture this season. This should make it unanimous and probably means that all wheels for 1936 will be all-steel with steel stamped spokes.

—J. G.

MANUFACTURING MANAGEMENT METALLURGY

AUTOMOBILE QUIETING

by John S. Parkinson*

THE public judges automobile noise relatively. A car which was quiet ten years ago would be condemned as unduly noisy today — because the buyer has learned to regard that noise as unnecessary. There is no absolute criterion to determine when a noise is necessary—the industry itself sets that standard. The motor car will never be quiet, but it must always be quieter.

It is interesting to examine the factors which cause a sound to be annoying. The most obvious one is loudness. But loudness is not the sole criterion. There must be a considerable change in the intensity of a noise source before the ear even recognizes it—something of the order of 25 per cent. Roughly speaking, to reduce the apparent loudness of a noise by one half, it is necessary to reduce the sound energy given off ten times.

The frequency of a sound is very intimately related to its annoyance. Generally speaking, unusual frequencies are more disturbing—very high ones or very low ones. A recent investigation in connection with factory noise showed that the annoyance factor increased steadily with frequency. The writer has seen cases in other industries where, efforts to reduce the noise intensity having failed, the problem was solved very simply by altering the frequency to one less annoying. As a matter of fact, the frequencies which carry most of the energy in motor car noise are between 150 and 500 cycles, and only the very lowest or highest of these can truthfully be called annoying. The problem is thereby greatly simplified. A major improvement can sometimes be effected by removing a few very low or very high frequency components, although the main body of noise energy has not been affected.

Intermittent or irregular sounds are more disturbing than regular sounds. This is probably because it is more difficult to disregard them. The alarm clock manufacturers have learned to utilize this principle; they have found that a soft tinkle at irregular intervals will awaken a sleeper more surely than a blatant, but continuous, ring. Hence the complaints that arise from resonances at particular car speeds, and from loose parts which make irregular sounds.

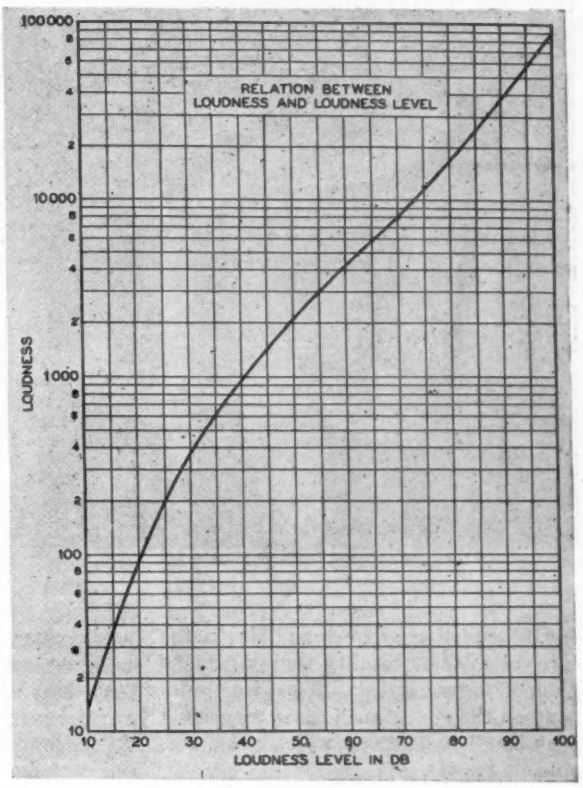


Fig. 1—This graph shows the relationship between the apparent loudness of sound and the loudness level in decibels as determined experimentally. It is useful in predicting what percentage change in the noise can be expected from a given reduction in decibels

The average person is unreliable in judging quiet or noise unless he has some standard of comparison at hand. One of the large insurance companies vividly illustrated this point. They treated an office work space and checked the workers' reactions over a period of about a year. Toward the end of the year a number of the workers thought the quieting treatment had lost most of its efficiency; the results did not seem to be as apparent as they had earlier. At the end of the year the treatment was covered, so that the room was returned approximately to its original condition. Now the protest was general—given a basis of comparison, no one had any difficulty observing the difference. In terms of motor cars this means that a car may be really very quiet, but unless it is markedly quieter than its competitors this has little sales value.

The actual problem of measuring noise and noise reduction is by no means simple, and it is made even more complicated by the fact that the ear itself is not a simple mechanism. The ear is more sensitive for frequencies between 1000 and 4000 cycles than for lower or higher sounds. On the other hand, it recognizes changes in intensity in these sounds more quickly than for sounds in the middle range. Two sounds of nearly the same frequency do not sound as loud as two sounds of the same actual intensity but widely different frequencies. At any frequency a given change in intensity sounds greater if the sounds are very loud or very faint to begin with, than if they are more nearly of average loudness. All of these things must be considered in trying to predict ear judgments, and these same ear judgments will always be the final test in determining the effectiveness of a given job of quieting.

One is tempted to ask, then—why not leave all questions of quieting to the ear? The answer is that the ear is not a precise instrument for certain types of comparisons. We do not retain the impression of a sound for any great length of time and unless we can make our comparisons in rapid succession they become unreliable. If a car must be stopped, so that twenty-four hours or forty-eight hours elapse between tests, comparative ear judgments are worthless. Furthermore, the ear cannot detect small changes in sound intensity (less than about 25 per cent). Most quieting jobs are the accumulation of a number of small improvements, any

* In Charge, Accoustical Engineering Section. Johns-Manville Research Laboratories.

Fig. 2.—Test arrangement for measuring damping of automobile body panels. Treatment is applied to the back of the steel sheet shown in the clamping frame. The sheet is given a shock excitation with the ball and the sound given off is picked up by a microphone (right) and measured on the meter (on the floor) or recorded on an oscillograph. Measurements are made in a "quiet" room—note the acoustic treatment on walls, floor and ceiling

Courtesy Acoustical Laboratory Johns-Manville Research Laboratories

one of which may be inaudible to the ear, yet in their totality representing a distinct improvement. Were we to depend on the ear in such cases we should miss small indications which show significant trends.

The first attempt to assist the ear took the form of a calibrated buzzer or single tone which could be available at all times for comparisons. This was the principle of the Audiometer. Unfortunately it did nothing to improve the differential intensity sensitivity of the ear, and could of course not change the variations which occur between various ears.

Modern noise measuring technique employs an instrument called (by recent agreement of interested parties) a sound level meter. This consists normally of a microphone, audio amplifier, and rectifying type micro-ammeter. The readings of such an instrument are proportional to the square of the sound pressure striking the microphone (i.e., the intensity) within the range of frequencies over which the amplifier and microphone possess a uniform response. This range in a good quality instrument will extend from 40 or 50 cycles to 7000 or 8000 cycles. In order to imitate the varying sensitivity of the ear for different frequencies, a weighting network is customarily inserted. No single network will exactly duplicate the differential pitch sensitivity of the ear at all intensity levels, nor will any network serve to duplicate the characteristic mentioned earlier—that the ear recognizes intensity changes more quickly at very high and very low frequencies.

For these reasons and others it is customary to use a frequency analyzer in conjunction with the sound level meter, which will determine the distribution of noise energy over the frequency spectrum. A frequency analysis is useful as indicating the most likely noise sources; as giving a measure of special treatments and constructions whose effectiveness might otherwise be masked by other sounds; as providing a measure of annoyance, etc.

Certain noise meters supply indicating meters with more than one damping constant. It is customary, if only one such constant is used, to approximate ear characteristics. The meter is then so designed as to allow its full reading in the same time interval which the ear requires for its response. By this device the user is assured that if two sounds are so close together as to be indistinguishable to the ear, the meter will record them as one, instead of trying to follow each separately. A somewhat more heavily damped meter is, however, sometimes advantageous as a means for averaging sounds which are unsteady or fluctuating in character.

All sound level meters read in decibels. This unit has attained almost universal recognition because of its usefulness in covering a wide range of intensities. The decibel is defined as 10 times the logarithm of the power ratio.* At 1000 cycles the ear can hear intensities varying in a ratio of a million million to one, or 120 db. One decibel represents an intensity ratio of approximately 5/4, which is also about the minimum perceptible intensity change which the ear recognizes. The significance of the decibel scale has not yet been fully grasped by the automotive industries. Airplane manufacturers, refrigerator manufacturers, air conditioning engineers, etc., have all adopted the practice of rating their product in terms of the noise level in decibels under specified conditions. Such a step requires a certain courage, because it invites direct comparison, but has great virtue in crystallizing customer ideas.

At the present time, sound level measurements can be made successfully only on road tests. It is to be hoped that in the near future a means will be developed whereby a car can be run on a test stand, perhaps with certain irregularities introduced on tires or rollers, to obtain road conditions under reproducible conditions. Until such time as this type of test has been perfected, certain variables must always be considered in making noise comparisons.

The most important of these is microphone position within the ear. Because of standing wave patterns and localized noise sources within the ear, a single microphone position is rarely representative. At least two in front and in rear should be taken, and more if any special area is suspected as a source. The next most important variable is speed, because not only the intensity, but also the energy-frequency distribution will vary with speed. Windows and ventilators, nature of pavement, tires and wind speed and direction are other variables which should be noted. Even the presence of snow on the ground will influence results noticeably.

An important precaution is to calibrate the meter against a known constant noise source before and after each set of tests. All portable noise level meters are battery operated, and consequently lose sensitivity gradually as the batteries grow older. The importance of this precaution cannot be overestimated, since the losses involved may be even greater than the variations proper to the readings.

A sound level meter is often used to supplement the ear in tracing a certain noise. Nearly all instruments have an arrangement whereby an ear phone can be plugged in instead of the indicating meter. The observer listening with this phone can select the sound in question by properly adjusting the frequency analyzer and can amplify it to many times its original magnitude. Mechanisms of this sort have already found a place in the manufacture of allied products.

* Note that it is not a definite physical quantity such as a gram—it is a ratio.

The New Tillotson Downdraft Carburetor Has Velocity Control

THE Tillotson Manufacturing Company, Toledo, O., announces a new carburetor of the downdraft type, of which two sectional views are shown herewith. It has a double venturi, and as the outlet of the fuel nozzle is located at the throat of the small venturi, the air velocity past the fuel nozzle is quite high even at low engine speeds. In order to prevent excessive air velocities and consequent wire drawing of the gaseous stream at high speeds, the larger venturi is provided with four reeds which are deflected by the difference in pressures on their inner and outer sides and permit some air to pass around the outside of the outer venturi at the higher engine speeds. These reeds of Swedish spring steel flex in proportion to the pressure difference, and therefore open up more at high speeds, which tends to keep the velocity of flow through the venturis constant. Laboratory tests are said to have shown that the reeds have a life which far exceeds that of the car.

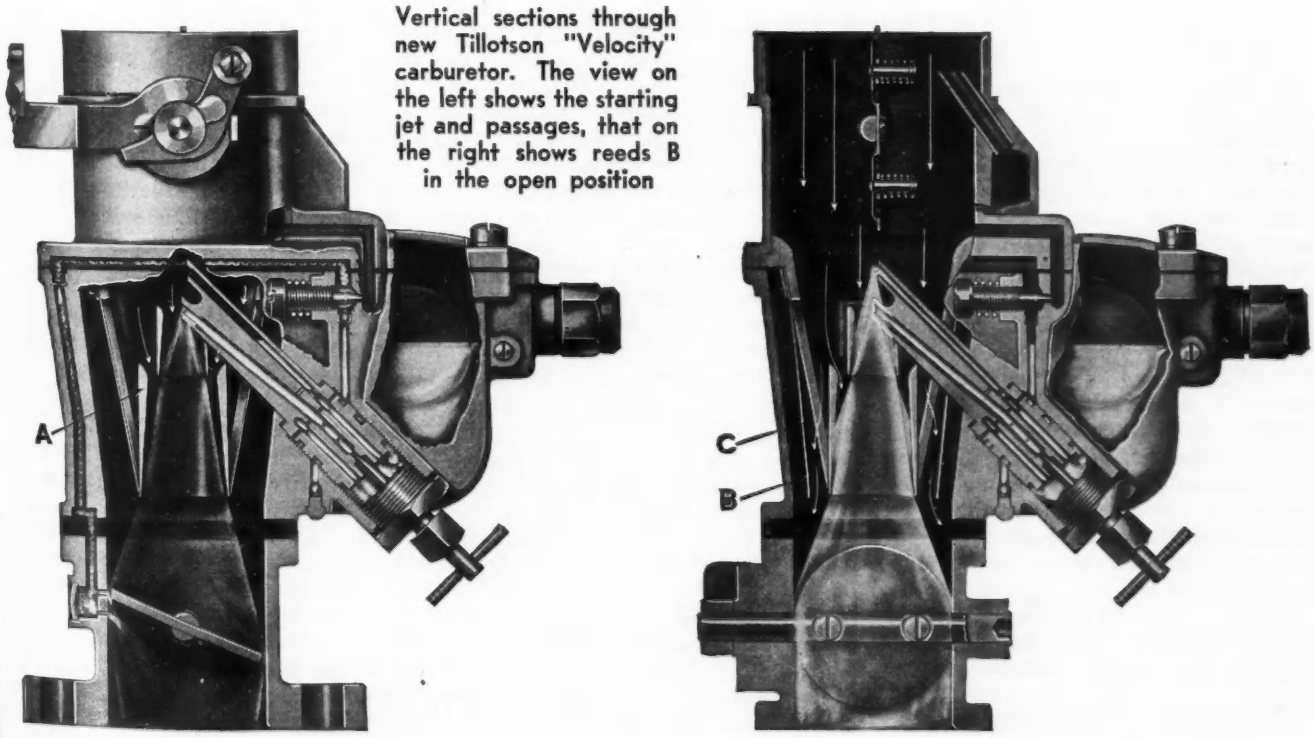
In addition to this velocity-control feature, the new carburetor has all of the usual features of modern carburetors, including an improved slow-speed system of restrictions and passage-ways to insure a non-stall, even-firing mixture for idling; a twin-delivery high-speed nozzle which regulates the fuel flow in accordance with engine speed and load; a power jet which automatically enriches the mixture for high output as required in hill climbing, etc., and a positive-acting accelerating pump which enables the engine to respond promptly to the throttle.

Separate adjustments are provided for the low-speed and high-speed ranges of the carburetor, and these adjustments are easily accessible. The float bowl communicates with the air horn in such a way that it is impossible for a clogged air cleaner to unduly increase the fuel consumption. The fuel level in the float chamber is kept uniform by means of a large brass float.

It is claimed for this carburetor by its manufacturer that the relatively high air velocity through the venturi at all speeds causes the fuel to be discharged around the entire periphery of the specially quilled delivery outlet. Fuel discharged from the secondary outlet must pass through the primary and secondary venturis, thereby correcting any tendency to improper distribution from this source.

Any tendency toward percolation and vapor lock is said to have been practically eliminated by increasing the area promoting heat transfer to the fuel in the bowl, thereby vaporizing and "weathering" the light ends in the bowl itself.

The four concentric yielding reeds constitute a variable venturi, a feature that is said to adapt the carburetor for use on engines ranging in output from 50 to 90 hp. without change in carburetor dimensions.



Vertical sections through new Tillotson "Velocity" carburetor. The view on the left shows the starting jet and passages, that on the right shows reeds B in the open position

New Lines and More
NSPA Jobbers Expand

NEW lines, additional branches, more salesmen and improved business conditions were the principal factors responsible for the increase in volume which automotive wholesalers enjoyed in 1934, according to a survey of jobber sales management made by the National Standard Parts Association.

The number of jobbers who contributed information on their operations was 69, representing approximately one-quarter of the wholesaler membership of the association. These firms included both large city and small town jobbers with annual volumes ranging from less than $75,000 to more than $300,000 and thus provide a cross-section through automotive wholesaling. However, the number of jobbers participating was such a small proportion of all automotive wholesalers that too precise conclusions obviously are not justified. On the other hand it is quite possible that if a larger number of jobbers had participated, the percentages might not have been altered greatly. Nevertheless the survey results do present a picture that is both valuable and interesting.

The reporting jobbers got 59 per cent of their volume from city territory and 41 per cent from rural areas. The approximate average radius of the territory covered was 64 miles, with the seven jobbers with sales of more than $300,000 showing the smallest average radius—40 miles. Four of these bigger jobbers, however, were located in cities of more than 350,000 population. The largest average radius was reported by the $200,000-$300,000 volume group and all of this classification were located in cities of less than 350,000.

Ninety per cent of this NSPA group increased sales in 1934 by an average of 19 per cent. There was little variation in the average percentage of increase with annual volume. However, only 69 per cent of the jobbers selling less than $75,000 annually reported increased volume, as contrasted with 90 per cent for the group as a whole.

In assigning credit for the increase in business, 49 per cent of those participating gave credit to new lines, but the survey indicates that this was a more important factor in the case of the smaller jobbers than for the larger ones. An expansion in the number of branches was reported as a reason for bigger volume by 23 per cent, with half the jobbers selling over $300,000 mentioning new branches as a factor responsible for the improvement in their business. More salesmen were listed as helping to expand sales by 26 per cent, this cause apparently bulking largest in the minds of those selling between $125,000 and $200,000, as 46 per cent of them mentioned it.

by Don Blanchard
Editor, Automotive Industries

Other activities mentioned as helping to expand volume were greater concentration of effort on major lines, planned sales campaigns, more advertising, salesmen's trucks and more intensive coverage of the territory. Seventy-four per cent of the group, incidentally, reported an average increase of 15 per cent in service parts sales, while 58 per cent said that they segregated Ford and Chevrolet parts.

Three-quarters of the group reported that they sold an increased volume to independent repairmen, 55 per cent that they sold more to the car dealer, 50 per cent larger sales to fleet operators, 31 per cent increased sales to filling stations, and 14 per cent more sales to other buyers.

Due to the manner in which the information was requested, the data on the cost of doing business are somewhat obscured. Apparently most of the jobbers reported total costs of doing business and since volume was up an average of 19 per cent, it is not surprising that 65 per cent report an increase in the cost of doing business. Whether the percentage of expense to sales was up cannot be determined definitely from the data.

The group got an average of 60 per cent of their volume from independent repairmen, 20 per cent from car dealers, 12 per cent from fleet operators, 6 per cent from retail sales, 4 per cent from other jobbers and the balance of 3 per cent miscellaneous, these percentages not varying greatly with annual volume. Independent repairmen, car dealers and fleet owners are called on regularly by more than 90 per cent of the jobbers, with 78 per cent contacting filling stations regularly.

Fifty per cent of these NSPA jobbers put car dealers in the "best pay" classification as against 45 per cent so classifying fleet operators and 27 per cent awarding the credit blue ribbon to independent repairmen.

The survey states that, while the independent repairman is the jobber's most important customer, generally they have been oversold on the jobber's stock and service. As a result many of them carry little or no stock, depending on the jobber to give service when the need arises. This practice, the survey says, has probably contributed more than anything else to increasing the jobber's cost of doing business because of small orders and delivery expense. To meet this situation, the survey advises that repairmen be classified into (a) those who give a satisfactory volume, carry some stock and give promise of development, and (b) those who do not meet these standards. Concentration of sales effort on the first group is recommended to sell them on carrying some inventory and also to improve their methods so that they will get more volume.

As the second largest customer of the jobber, the survey emphasizes the importance of selling the car dealer on the service the jobber renders, and points out the opportunity of selling the dealer parts for cars other than the make he sells as well as many parts for the dealer's own make of car. Jobbers are advised to have an executive of the firm follow fleet owner accounts, or at least a specially trained salesman. A complete record of the vehicles in the fleet should be obtained and parts should be stocked to serve them. The tendency of filling stations to render a broader range of services also is

Branches Help Sales in 1934

stressed as presenting an opportunity for increased sales.

On inside organization, the survey reports that 73 per cent of the jobbers participating keep records of customer purchases by months; 60 per cent of calls made by each salesman; 55 per cent of volume of sales by major lines; 49 per cent a prospect follow-up file; 37 per cent a record of calls made on each customer, and 17 per cent of customer purchases of major lines. These percentages vary somewhat with annual volume, but the variations do not appear particularly significant.

In connection with the selection of salesmen, 83 per cent reported that they did not find salesmen with previous jobber experience more satisfactory than men they trained themselves. However, 95 per cent regard salesmen who have had previous counter experience in the jobber's own store as making more productive outside salesmen.

The average number of salesmen employed by the group was 9.3, 4.5 being outside and 4.8 counter salesmen. The number of salesmen, of course, varies directly with the annual volume of the jobber employing them, wholesalers selling less than $75,000 having an average of 5.1 inside and outside men, while those selling more than $300,000 annually average 21 men, with other volume groups in between these two figures. The salesmen average 68 calls per week and this figure applies rather well to the salesmen of both large and small jobbers. Sales contests are used by 53 per cent of the group, with the monthly variety the most popular. Sales meetings are held by 85 per cent of the reporting jobbers, mostly on a weekly basis. The subjects most frequently discussed are sales promotion plans and new items, followed by credits and collections. The jobbers are practically unanimous in having factory men talk at these meetings. Factory men are considered valuable also in connection with parts sales when calling on the trade, 79 per cent of the group believing that such calls should be made in company with the jobber salesman.

Direct mail advertising is done by 90 per cent of the group at their own expense and is considered the most effective form of publicity by 83 per cent. Advertising appropriations were spent accordingly as out of an average advertising expense of 1.3 per cent 0.8 per cent went for direct mail.

Sixty-seven per cent of the group held trade meetings in 1934. The average number held per jobber was 2.9 with an average attendance of 169 and an approximate average cost of $99. Incidentally, these meetings seem to be more popular among jobbers in farm territories.

Branches are operated by 50 per cent of this NSPA group including all selling more than $300,000 annually, ranging down to 25 per cent of those selling less than $75,000, none of whom had more than one branch. The jobbers selling $300,000 or more annually, on the other hand, have an average of 4.3 branches. Nineteen per cent of the firms added branches last year. Three per cent decreased branches and these were all among the bigger jobbers.

Merchandise trucks are operated by 22 per cent of the group, with 31 per cent of those having less than $75,000 volume having trucks, ranging down to 14 per cent of those selling more than $300,000. The average number of trucks operated is 2, with those selling between $75,000 and $300,000 averaging from 2.2 to 4 trucks per jobbers, as compared with one each for the largest and smallest jobbers in the survey. Merchandise trucks also appear to be more popular among jobbers selling in agricultural areas than with the big city wholesalers.

Retail sales are encouraged by 64 per cent of the group and there does not appear to be any great difference in this regard between large and small jobbers. However, it seems to be much more common for jobbers in farm areas to encourage retail business than for big city wholesalers.

Improvements in Flying Boats

I. SIKORSKY, designer of the Sikorsky S-42 flying boat, expressed the opinion that in no other field of air transportation have there been such great improvements in performance and efficiency recently as in large flying boats. In his paper, entitled "Design Problems and Methods for Large Flying Boats," he made a comparison between the S-42 and its predecessor, the S-40. How much the performance has been improved can be seen from the following comparative figures:

	S-40	S-42
Weight	21,000 lb.	19,764 lb.
Gross weight	34,000 lb.	38,000 lb.
Equipment	1,000 lb.	2,181 lb.
Crew	1,000 lb.	1,000 lb.
Gas an oil (1000 miles)	7,800 lb.	6,692 lb.
Payload	3,200 lb.	8,363 lb.

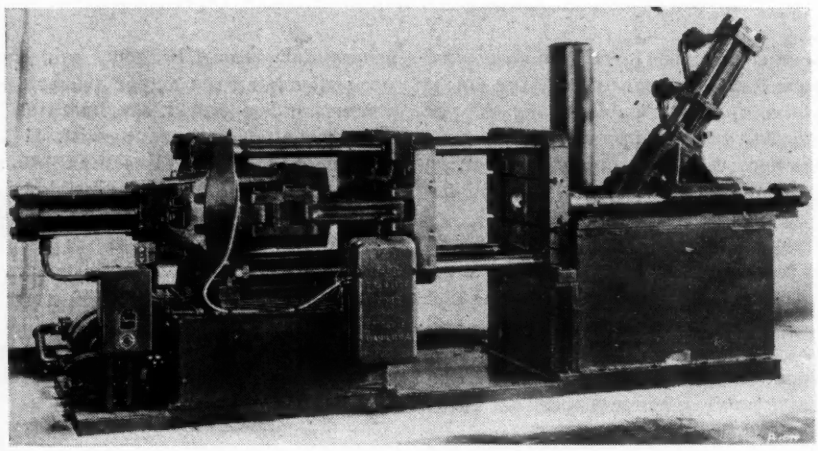
Mr. Sikorsky expressed the view that the development of flying boats is of great importance particularly to this country, as it offers a basic means of rapid contact with other parts of the world. He said he believed we would shortly see daily departures for Europe and the Orient of luxurious flying boats. Civilization, he said, demands a fast and comfortable international air service, and the fulfillment of this demand will soon be realized.

Cast Crankshafts Gain

THE use of cast crankshafts appears to be gaining. *Nickel Cast Iron News* reports that the crankshaft of the starter engine used with Caterpillar Diesel engines is cast of nickel-molybdenum cast iron, while the Witte Engine Works of Kansas City, Mo., produces 5 and 10-hp. single-cylinder horizontal Diesel engines with crankshafts and connecting rods cast of a nickel-molybdenum high-strength iron. In both cases balance weights are cast on the crankshafts.

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools



Full Hydraulic Die Casting Machine

Hydraulically operated throughout, a new die casting machine has been brought out by Reed-Prentice Corp. of Worcester, Mass. It is designed to produce aluminum, zinc or brass castings.

This machine can be operated either manually or automatically. For automatic operation it is only necessary for the operator to throw one lever to put it through its cycle. The first operation, closing of the die, is followed by the down movement of the metal plunger cylinder forcing the metal into the dies. It is impossible for the metal plunger cylinder to function until the dies are securely closed. The third operation is the electric time delay relay allowing for a dwell or solidifying period of up to 20 seconds, eliminating the necessity of the operator estimating the solidifying period. At the end of this period the machine automatically goes through the reverse cycle and is ready for the next operation.

In manual operation, two interlocking levers are used.

Provision is made for the automatic ejection of the castings, allowing them to drop into a box or chute at the bottom of the die.

Neon Turn Signal

A turn signal known as the Neon Arrowlite, which lights up a neon tube in the form of an arrow when the driver wants to change his course, has been developed by Neon-Arrowlite, Inc., 71 Perry Street, San Francisco. The switch which lights up the lamp can be closed without removing the hand from the steering wheel.

These turn signals are made in DeLuxe and Standard types, the DeLuxe type comprising one signal which is mounted on the front fender and one which is mounted on a bracket on the rear fender, while the Standard type comprises a single unit mounted on the front of the door at the driver's seat. However, both the DeLuxe and the Standard type are made for left-turn signals only or for both right and left-turn signals, in which latter case the DeLuxe set comprises four lamps, one for each fender. The front-fender signal is always in full view of the driver, and since it cannot light up unless the rear lamp is also lit, the driver is always assured that all of his signals are working properly. An automatic cut-out switch prevents lamps being left on carelessly.

New Durez Material

A new Durez phenolic molding material for larger holdings of the deluxe type has recently been announced by General Plastics, Inc., North Tonawanda, N. Y. Known as 2260 K Black, the new material has a higher than average impact strength and is being used on applications where the finest types of moldings are desired. Its impact strength is approximately 33 1-3 per cent greater than the general run of phenolic molding compounds. Because of this, and because of the excellent finish obtained, it is finding applications for instrument cases, boxes and containers to withstand rough usage, as well as many decorative parts and products. It has a compressive strength of 29,000 PSI, a heat resistance of 400 deg. F. and weighs 22.2 gms. per cu. in.

Bendix Products Announces Low-Priced "Inspection Line

Announcement of a new, low-priced, safety inspection line, called "Bendix Standard Safety Clinic," has been made by Frank B. Willis, general sales director of The Bendix Products Corp., South Bend, Ind.

The new Bendix Standard Safety Clinic is especially designed to quickly inspect and determine the safety factors of wheels, brakes, axles and all vital safety features of any automobile. It is designed for floor, flush, or raised ramp mounting. It makes corrections for caster, camber, toe-in, king pin angle, steering error, and includes a Cowdrey brake tester for brake adjustments. It is capable of testing from 30 to 50 cars an hour.

King Pin TestABrak

A new brake-testing device has been marketed under the above name by the Allbestos Corporation, Philadelphia, Pa. It is based on the decelerometer principle and can be installed permanently on the steering post of the vehicle. There are three parallel scales on the instrument, which give the approximate stopping distances from 20, 30 and 40 m.p.h. respectively. These scales, moreover, are divided into three zones each, showing whether the brakes are "Excellent," "Good" or "Not Safe." We are informed that the King Pin TestABrak has been calibrated with a well-known decelerometer used by State Highway Patrol officers.

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

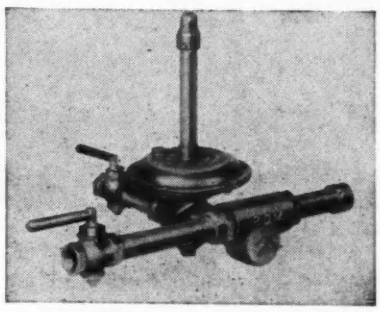
Floor Stand Drill Grinder

The Hisey-Wolf Machine Co., Cincinnati, Ohio, has brought out a floor stand motor driven drill grinder, illustrated here. It is intended for sharpening straight or taper shank drills; 1, 2, 3 or 4-lip drills, flat or chucking drill, flat twisted drills and drills with oversize shanks.

This machine is equipped with ball bearings throughout and provides for adjustable clearance and adjustable point angle. It is regularly supplied with one cup-shaped grinding wheel and one wheel for point thinning. The

latter can be replaced with straight-face wheel for tool grinding with the use of tool rest, as is also standard equipment for the left hand end of machine.

The machine is made in two sizes for D.C. and A.C. current; one for drills No. 52 to 1¼ in. diameter and one for drills ⅛ to 2½ in. diameter.



pressure to an inspirator into which the gas is drawn and mixed with air. Since the gas enters at constant pressure, the amount of gas is directly proportional to the quantity of air, causing the two to combine in constant, unvarying ratio, subject to manual regulation by means of a valve. The governor is said to be accurate, responsive and lag-free.

Machining or Sanding With Durez Material

For molded plastic parts requiring sanding or machining operations and subsequent repolishing, General Plastics, Inc., North Tonawanda, N. Y., announces a new Durez material, called 114 SB black. Instrument cases, machine parts and many decorative objects are sometimes partially machined or sand-buffed for certain reasons, and on ordinary molding materials the sanding or buffing will uncover flecks of the fibrous filler and in general spoils the color. This material has a greater depth of color, and a peculiar make-up which permits subsequent polishing to a soft, rich, satiny luster even after complete grinding off of the natural surface. It has a flexural strength of 10,000 P.S.I. and compressive strength of 28,000 P.S.I. and molds on regular cycles.

Ingersoll Zee Lock End Mills

Zee lock cutter blade, which was particularly designed for Ingersoll face mills by the Ingersoll Milling Machine Co., Rockford, Ill., has now been applied to inserted blade end mills. The blade is positively locked in the cutter body by a zee-shaped wedge. The wedge is so shaped that in addition to locking the blade it permits the blade to be adjusted automatically in two directions. That is, mostly outwardly on the diameter, but also a slight amount along the face.

Using renewable cutter blades of either high-speed steel, super-cobalt high-speed steel, "J" metal, or cemented carbide, the cutting edge and only the cutting edge is of hard and heat-resisting material. The cutter blades are of forged and heat-treated chrome-molybdenum steel, which is tough and strong.

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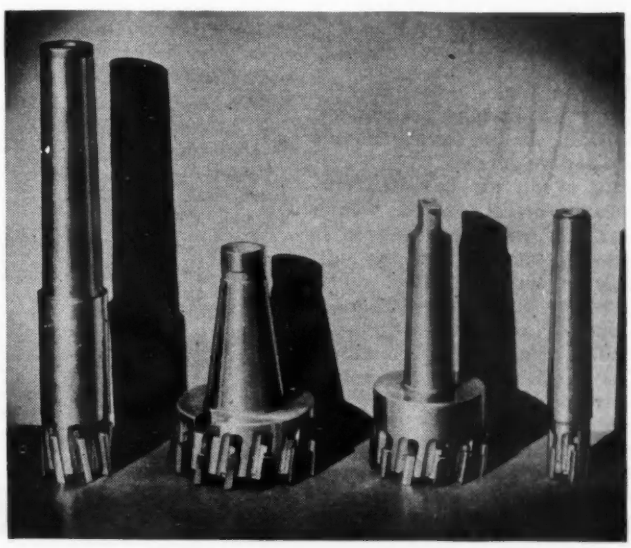
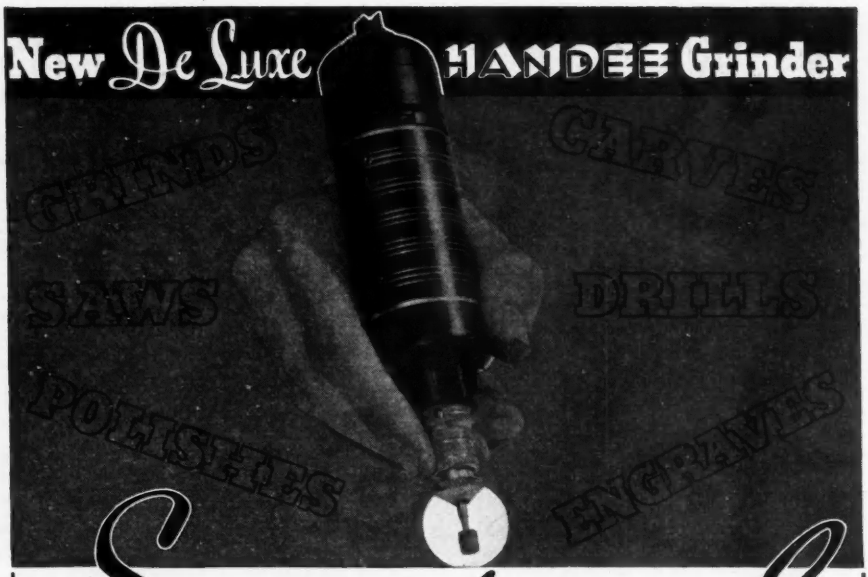


New Mixing Valve for Uniform Flow

The Philadelphia Drying Machinery Co., Philadelphia, Pa., has brought out a mixing valve for burner applications where close control of atmosphere is desired in the interest of efficiency and uniform results.

Essentially, the P.D.M. Proportional Mixer consists of a diaphragm-actuated control valve, known as a Zero Governor, which feeds gas at atmospheric



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ELECTRIC TOOL

For constant service. Nothing else like it. New design—modern materials — revolutionary performance. With a speed of 25,000 r.p.m. and ample power, this compact, easy-to-handle production tool does 1001 jobs with astounding savings in time and labor.

Weighs 12 ounces. 6″ long, 1⅝″ in diameter. Fastest and most powerful portable tool for its weight and type ever developed. Price $18.50, complete with 6 Chicago Mounted Wheels.

10 Days Trial.

Ask Your Supply House for Demonstration or Write for More Detailed Information.

CHICAGO WHEEL & MFG. COMPANY

1105 W. Monroe Street **Chicago, Illinois**

New Simple Spot Welder Control

The Clark Controller Company, Cleveland, Ohio, is marketing a new control for spot welders.

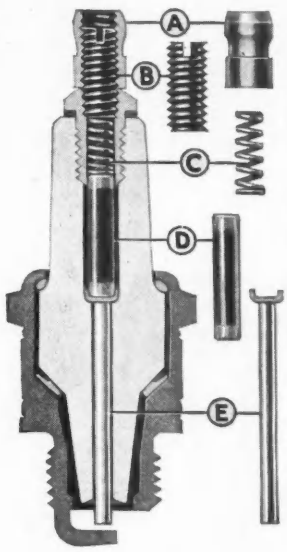
It consists of an air operated contactor connected directly to the welder head air cylinder. Being connected in this manner—it operates from the built up or back pressure of the welder cylinder—thereby eliminating the need for any kind of pressure switch, or back pressure relay. The contactor cannot close until the welder points have come together on the work which is to be welded.

One stroke of the piston both closes and opens the contacts of the electric welder circuit and does this accurately. It is claimed this feature also eliminates the need for any timing mechanism or timing relay. Accurate timing as low as ½ cycle is guaranteed.

New AC Spark Plug With Built-In Resistor

A new type spark plug for cars equipped with radio has been developed by engineers of the AC Spark Plug Co. The new development is claimed to make possible better radio reception.

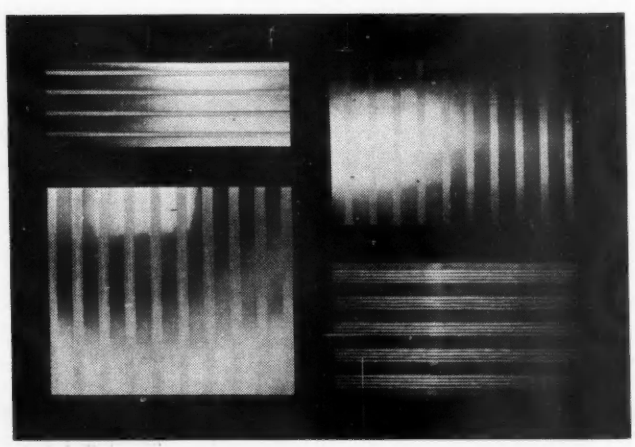
The new spark plug is designed with a resistor unit built into the insulator.



The resistor unit can be removed and replaced when it becomes ineffective without replacing the entire spark plug. It is claimed that, because the resistor unit is close to the point where the actual spark takes place in the cylinder, noise or click from the radio receiver is reduced to a minimum.

Stripes and Patterns Now Available in Acme Strip Steel

Strip steel in a new and attractive finish is now being marketed by Acme Steel Company, Chicago, Ill. "Satin-stripe" is the name of this new type of

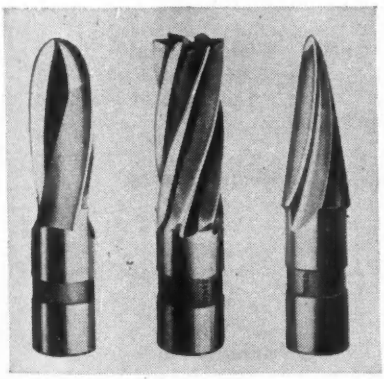


finish, which is composed of stripes or patterns rolled into the steel by specially ground rolls. Acme states that Satinstripe is available in many different kinds of stripes, varying in width and depth. Even with the application of chrome, nickel or color finishes, the beauty of the design shows through clearly.

New High Speed Die Sinking Cutters

Three new die sinking cutters for high speed use have just been introduced by Pratt & Whitney Company, Hartford, Conn. They are known as ball end, square end and 7 degree taper cutters. The design of the helix angle, relief, etc., is such as to permit spindle speeds up to 3600 r.p.m. when using these tools.

The ball and square end cutters, which are regularly furnished with right hand cut and right hand spiral flutes, are available in 13 sizes ranging from ⅛ in. to 1¼ in. diameter inclusive. The 7 degree taper cutters are furnished in 12 sizes ranging from ⅛ in. to ½ in. inclusive, the size designating the diameter of the ball at the small end. The 7 degree taper is on one side, the included angle being 14 degrees.



It is claimed that the new design and size arrangement of these cutters provide adequate chip clearance for severe service and sufficient projection length for deep die sinking. The general proportions being larger and more rugged than previous designs, it is said to be possible to machine deep pockets and sections of dies without danger of chatter or spindle interference.

New Brown Air Operated Controllers

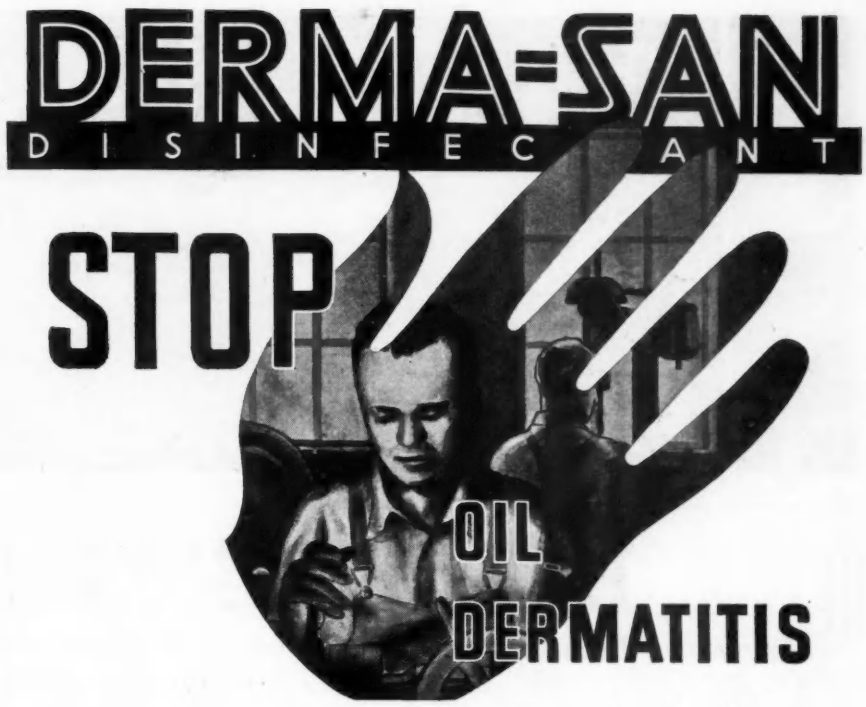
On its 75th anniversary, The Brown Instrument Co., Philadelphia, Pa., announces a new and complete line of recording and indicating air operated controllers for temperature, flow, pressure and liquid level.

Outstanding in this line is the Brown "Air-o-Line," a controller with 1 per cent to 150 per cent throttling range and automatic reset. This control system recognizes and corrects for the magnitude, rate and direction of departure from the control point. These instruments are capable of full automatic control and will maintain a process at the control point within extremely close limits.

Indicating and recording thermometer-type temperature controllers are available for temperatures within limits of —40 deg. F. and +1200 deg. F. Potentiometer-type controllers are available for temperatures within limits of —300 deg. F. and +3400 deg. F.

Two types of flow controllers and liquid level controllers are also offered; the inductance bridge type and the mechanical type. Thus, for the first time, the remote operating characteristics of the electric flow meter and the flexibility of air operated control are combined.

Indicating and recording pressure controllers are available in ranges from 30 in. vacuum to 3000 lbs. per sq. in. pressure.



The entire working force of your plant may be caught in the grip of Oil Dermatitis. Carried from worker to worker by cutting oils and cutting compounds infected during use, this serious skin disease spreads rapidly . . . crippling production . . . lowering plant efficiency. It costs owners millions of dollars each year.

You can protect your shop family from Oil Dermatitis by sterilizing cutting oils and compounds with Derma-San Disinfectant. It is 15 times more powerful than carbolic acid, but much safer to use. Just add 1 pint of Derma-San to 35 gallons of lubricant, and kill dangerous pus-forming germs *before* they reach your workers' hands.

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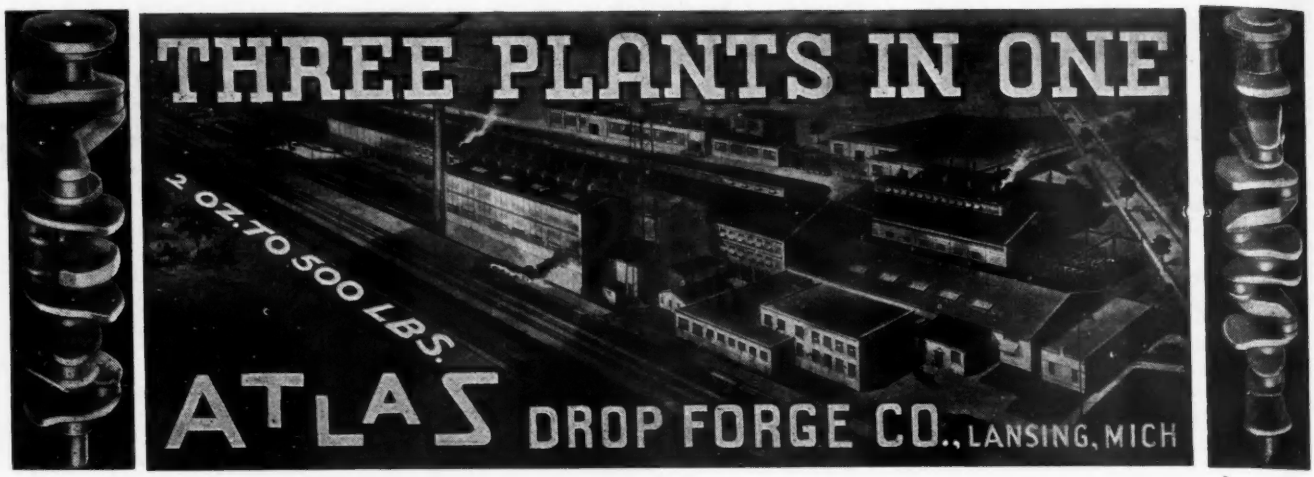
DERMA-SAN IS EXCELLENT FOR ALL GENERAL PLANT SANITATION

Oberhänsli an Austrian Engine

PROFESSOR LUDWIG RICHTER of Vienna Technical College calls our attention to an error in the May 4 issue of *Automotive Industries*, in which there appeared an item under the heading "Swiss Build 134-Cu. In. Diesel," describing the new Oberhänsli engine built in Bregenz. This latter city, he points out, is located in Austria and not in Switzerland, and the Oberhänsli therefore is an Austrian and not a Swiss engine. We are glad to make this correction.



BUYERS' GUIDE

Automotive Products and Factory Equipment Manufactured by Advertisers in This Issue

See Alphabetical List of Advertisers on page 44

This Advertisers' index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

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Aluminum Industries, Inc.
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Haynes Stellite Co.

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Canton Forge & Axle Co.

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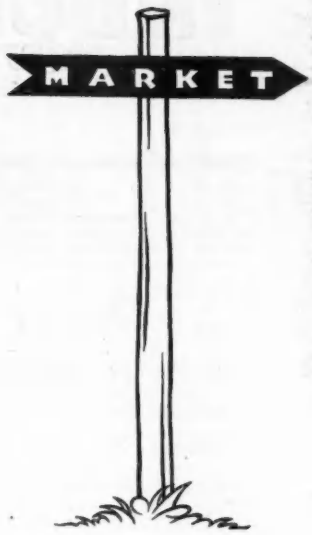
(*Turn to page 40, please*)



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